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THE FUNCTION OF THE PRACTITIONER IN THE MODERN MEDICAL SCHOOL *

RUSSELL L. CECIL, M.D.
NEW YORK

During the past thirty years a remarkable transformation has taken place in the character and pedagogic methods of American medical schools. A generation ago our medical colleges were poorly equipped and practically without endowment. At that time clinical teaching was carried on exclusively by practitioners, and in many institutions even the fundamental medical sciences were taught largely by physicians who were giving part of their time to practice.

Today the situation is entirely changed. Many of our leading schools of medicine have endowments that rival in size the entire financial assets of smaller universities. With this increase in wealth it has been possible for the medical schools to have the fundamental sciences taught entirely by professional teachers. In more recent years this movement toward full-time teaching has been extended to the clinical branches, and now a number of the leading schools have placed the departments of medicine, surgery and pediatrics under the control of full-time teachers. This elevation of medicine and surgery to the rank of true university departments has been of enormous value in establishing clinical medicine as an independent science, and the development of research laboratories in connection with the medical and surgical wards has added greatly to the opportunities for clinical investigation. With the appointment of full-time teachers and with a greatly improved laboratory equipment, the character of medical teaching in the United States has made great strides forward, so much so that it is safe to say that at the present time American medical schools are equal and perhaps superior to any in the world.

The placing of these large trust funds in the hands of medical schools has made the conduct of the modern medical college much more exacting. It is fitting and proper that a medical department, for example, with a budget of fifty to a hundred thousand dollars a year should be directed and supervised by a teacher who is devoting his entire time to the dispensation of such a huge sum. This trend toward full-time teaching is not confined to medical schools alone. Other professional colleges, such as law, engineering, architecture and theology, are conducted almost entirely by full-time teachers. It is inevitable that the modern medical school should follow their example.

There are, however, better reasons than these for the establishment of full-time teachers in medicine. Medicine is becoming an independent science and, if medical students are to have the proper scientific background, it is necessary that their teaching should rest largely in the hands of men who have the scientific point of view. G. Canby Robinson [1] has expressed this idea clearly in a recent address:

> The life of the successful physician is usually full of activity and in the majority of instances, especially away from the centers of medical progress, practice soon falls into a routine which is not often seriously disturbed by any innovation. . . . Many succumb to the force of example and precept of their older colleagues. They soon learn to do without the scientific basis that had been given them more or less thoroughly. In order to prepare students of medicine to resist in future life the forces of empiricism and tradition, scientific habits of mind must be firmly driven in.

Zinsser [2] makes the same point when he says:

> The medical student who intends to become a practitioner devotes four short years to learning the premises from which all his future reasoning must take its departure. The last two of these are spent in clinics which bridge for him the transition from the principles to their application. All the rest of his life is passed in practice, where it is easy for him to perfect himself in the exercise of his skill and ingenuity but excessively difficult for him to follow, even in his own specialty, advances in the basic sciences which may, in the turning of a hand, antiquate his accepted practice or put in his grasp new and powerful weapons to increase his usefulness.

The future practitioner of medicine must be in a position to understand and apply the advances of science in his daily practice. In order to do this, he must be rooted and grounded in the principles of science and in scientific methods of thinking. Only teachers who are themselves in the closest touch with medical science can impart these scientific habits of mind and provide him with a foundation on which he can build in after years. The modern teacher of medicine believes that the "art" of medicine is something which the student must learn from practical experience. The "science" of medicine must be drilled into him during his four years of medical school.

If modern medical education is definitely committed to the teaching of medicine by professional teachers, we may well ask the question: "Is the practitioner of medicine any longer needed in present-day organizations, and, if so, in what capacity? Must the practitioner with academic yearnings be content in the future to do his teaching in postgraduate schools and his research work in extra-university hospitals, or is there still a

* Chairman's address, read before the Section on Practice of Medicine at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 11, 1929.

1. Robinson, G. C.: The Application of Science to the Practice of Medicine, Science **69**: 459 (May 3) 1929.
2. Zinsser, Hans: Relationship of the Fundamental Laboratory to Clinical Teaching, J. A. M. A. **92**: 1399 (April 27) 1929.

place for his services in university medicine? I am of the opinion that the practitioner will still be a necessary part of the modern university organization and will now briefly present my reasons for this belief.

The first and perhaps most important function of the practitioner in the modern medical school is that of liaison officer, or middleman, between the university professors on the one hand and the general practitioners and the general public on the other. Without some such connecting link, there is danger of a loss of sympathy and understanding between these groups. With respect to professors and practitioners it is true, of course, that both groups are composed of doctors of medicine and both are referred to as physicians; but their professional aims and interests are radically different. The professor of medicine is physician-in-chief to the university hospital, and as such is naturally interested in the handling of patients; but his larger interest is in disease itself and the teaching of disease to students; the average practitioner is absorbed chiefly in taking care of sick patients and building up a practice. The professor is the scholar; the practitioner, the man of affairs. Professors of medicine, for example, are not particularly interested in county, state or even national medical organizations. Their multifarious duties in the medical school and hospital make it almost impossible for them to take an active part in these organizations. The practitioner gives his active support to these various medical societies for both social and professional reasons. Practitioners who spend a part of every day in the university clinic can report to the medical societies from time to time on the advances that are being made in research. The important advances in medical science must be taken up by the professors and instructors in clinical medicine and carried to the man in the street. New diagnostic measures, new remedies of all kinds, are first tried out in large hospitals. The practitioner who is in constant attendance at one of these hospitals keeps up with the scientific "gossip" and carries it outside to his colleagues who have no contact with the clinic. Just as the practitioner with university affiliations acts as a middleman between the professor and the family physician, so he may also be the means of keeping public-spirited laymen and philanthropists in sympathy with the hospitals and medical schools. It is only by stimulating this interest that the endowments so necessary to full-time medicine are obtained.

Another important field for the practitioner in the modern medical school is in the outpatient department. Here the practitioner finds himself in his natural element. The type of patient that comes in to an outpatient clinic is the same type that makes up the bulk of the physician's office practice. For some reason the full-time professor usually finds it difficult to become interested in the outpatient department. The vague symptoms and signs which these patients so often present do not lend themselves to vivid demonstrations or to dogmatic teaching. The young practitioner is particularly interested in outpatient work because it fills the gap between his internship and the day when he receives an appointment on the visiting staff of a hospital.

There will always be a few practitioners who have a talent for research work, and if they have such a talent, every opportunity should be given them by the university clinic to carry out their ideas. It is really surprising how many of the important contributions of the last two decades have come from men who have been engaged in active practice. One need only mention Banting and diabetes, Minot and pernicious anemia; but many others could be cited. The practitioner will always approach a problem in medicine at a somewhat different angle from that of his colleague in full-time medicine. The practitioner is intensely interested in the practical application of science to his profession. His problems therefore are usually concerned with some diagnostic measure or some new therapeutic agent. No one will deny, however, that these problems are just as important as the more fundamental problems usually attacked by research fellows or university professors. There is danger, of course, that the practitioner's research will take on a superficial quality. Some of the research now being done by men in practice shows a lack of adequate training in the fundamental branches of science. This is particularly true of much of the work that is being carried out in the field of bacteriology but applies to a less extent in the fields of physiology and chemistry. A great deal of money and time is being wasted on half-baked research work which, because of its inaccuracy, leads other workers astray, at least for a short time, and fills up medical literature with a mass of useless data which might better have never seen daylight. Research is a form of intellectual endeavor which, if not done well, is best left undone. Much of this inaccuracy in clinical research is involuntary; some, unfortunately, is purposeful, with an eye to its beneficent effect.

In the field of teaching, I believe that there is still a distinct need of the practitioner in medical education. The time may come, twenty or thirty years hence, when the entire training of undergraduate medical students will be taken over by full-time professors and instructors. At the present time, however, the practitioner still fills an indispensable place on the teaching staff of the medical school. In the wards he approaches the sick patient from a practitioner's standpoint; the professor of medicine approaches the patient with an enormous interest in his disease. The students are entitled to both points of view. The practitioner is likely to have at his command certain facts in the practical application of therapeutics which will be of special interest to the students. Furthermore, the special branches of internal medicine, such as gastroenterology, neurology and the diseases of allergy, are still largely in the hands of practitioners, and students should have the benefit of their knowledge and experience. The practitioner will be particularly valuable as a teacher in the outpatient department. Functional diseases, which constitute such a large part of the practice of medicine, receive very little attention in the wards. If the student is to become familiar with this very important group of diseases, he will have to receive his instruction concerning them in the outpatient department. The practitioner, who is only too well acquainted with this type of patient, is best qualified to give instruction concerning it. Our students at Cornell have always shown a particular interest in minor surgery. I believe they would be just as deeply interested in a course in "minor medicine," a course that would deal exclusively with the rather insignificant ailments to which humanity is so prone.

A word should be said here about teaching the so-called art of medical practice. This is something which neither the full-time professor nor the practitioner can impart to the student, but is that intangible something which physicians either possess naturally or

pick up from experience. A considerable part of the "art" of medicine is compassed by good breeding; the remainder is the skill which the physician acquires in practicing his profession. The practitioner who proposes to teach modern medicine must vie with his full-time colleague in keeping abreast of his subject. He must find time in his busy life to keep up with the current literature and visit other clinics. Some of the older school of practitioners developed a method of teaching which was full of human interest and oratory but rather dilute in respect to rational medicine.

How much time should the part-time teacher devote to his university and hospital work? We must assume, of course, that he is interested in academic medicine and will give to it all the time that he can spare from his other duties. During his thirties and forties he should be able to give from one half to one third of his day to college affairs. After 50, the burdens imposed by practice, medical societies and other activities may make it impossible for him to devote half time to the school. After 60, his value to the medical school, both as a teacher and as an investigator, will depend entirely on the individual.

How shall the practitioner be rewarded for his services to the medical school? If it is true that men who are successful in outside practice have something very definite and important to contribute to medical teaching, they should have proper compensation in titles, salaries and clinical opportunities. The men who prove themselves most valuable to the school should eventually become professors of clinical medicine. The size of their salaries will naturally depend on the amount of time devoted to university work. In times past, when medical schools had little or no endowment, many of the clinical teachers gladly gave their time for nothing. Even at the present time practitioners with large incomes, whether derived from practice or from private fortunes, are willing to work in the medical schools for practically no remuneration because of the prestige associated with such positions. In the richly endowed schools, however, it would seem hardly fair for the medical colleges to accept a considerable part of a practitioner's time without making some compensation for it. As for clinical opportunities, there is a tendency in several leading schools now to turn over the ward patients and bedside teaching to full-time teachers, and to limit the practitioners' activities to the outpatient department. I am convinced that such a policy is not desirable and, if persisted in, will eventually alienate the interest of the better practitioners from university work.

This address was almost spoiled in the making by a conversation which I recently had with a distinguished colleague who is now engaged in full-time medicine. When I spoke to him of the problem which I had in mind, he remarked that there was nothing which the practitioner had to give to the modern medical school which could not be supplied as well by the full-time professor, *provided he were the right type of man.* Any physician who combines the broad human sympathies with the spirit of scientific medicine will be a valuable asset to the medical school, whether he is in practice or not. Francis Peabody,[3] in his remarkable letter on the Soul of the Clinic, remarked that he had become as tired of discussions on full-time teaching as he was of discussions on the Eighteenth Amendment. After pointing out that a complete full-time system would be impossible from an economic point of view, even if it were desirable, he concludes with the following:

> In the last analysis, the whole problem resolves itself into what kind of men you select for the hospital staff. . . . What we want is less of the system and law that kills and more of the spirit that gives life.

The most valuable asset to any university is the inspired teacher, the man possessed with that indefinable something which arouses the interest and enthusiasm of the student. Such men are rare in all colleges and all medical schools. How few teachers have the power of making what they say stick in the memory! And how such teachers are prized by the student! We cannot afford to exclude a man of this type from the medical school because he happens to enjoy practicing medicine as well as teaching it.

American universities will make a great mistake if they allow gifted and talented physicians to lose their interest in medical education. There are many practitioners who still have a profound interest in medical teaching; and, if this interest is fostered by proper recognition from the universities, these men will continue to fill a useful place in the modern medical school. The closer association of practitioner and professor in both didactics and clinical work will make the practitioner a better professor and the professor a better practitioner.

33 East Sixty-First Street.

3. Peabody, F. W.: The Soul of the Clinic, J. A. M. A. **90**: 1193 (April 14) 1928.

DIETS FOR THE IDENTIFICATION OF FOOD ALLERGIES

JANE DALE, PH.D.
AND
HARVEY D. THORNBURG, M.D.
LOS ANGELES

Four methods of treatment are available in cases of protein allergy: elimination of the allergen from the environment or the food of the patient; desensitization by specific protein treatment; desensitization by nonspecific protein, and treatment of the symptoms, usually by means of drugs. The last method gives temporary relief and is useful in emergencies only. Desensitization by injection is frequently unsuccessful[1] and is always attended by some danger.[2] In cases of food allergy, Duke[3] considers injections of specific proteins justified only in cases in which the allergen is a common food which cannot be eliminated from the diet easily; he considers nonspecific protein therapy justified only in case the cause of illness cannot be found or removed. Desensitization by oral administration of the offending food gives irregular, unsatisfactory results.[4]

Elimination of the food or foods to which the patient is sensitive is the method of control of food allergy preferred by Sanford,[5] Duke[3] and Rowe.[6] Unfortunately the identification of these foods is difficult.

1. Rowe, A. H.: Abdominal Food Allergy: Its History, Symptomatology, Diagnosis and Treatment, California & West. Med. **29**: 317 (Nov.) 1928.
2. Hanzlik, P. J.: Blood and Tissue Changes in Anaphylactoid Reactions, California & West. Med. **23**: 161 (Feb.) 1925.
3. Duke, W. W.: Food Allergy as a Cause of Illness, J. A. M. A. **81**: 886 (Sept. 15) 1923.
4. Rowe, A. H.: The Treatment of Bronchial Asthma, J. A. M. A. **84**: 1902 (June 20) 1925. Sanford (footnote 5).
5. Sanford, A. H.: Protein Sensitization in Asthma and Hay-Fever, Minnesota Med. **3**: 174 (April) 1920.
6. Rowe, A. H.: Food Allergy, J. A. M. A. **91**: 1623 (Nov. 24) 1928.

Sensitization to several foods is common.[7] Therefore failure to obtain relief from symptoms on the omission of one food from the diet does not necessarily mean that that food is not contributing to the symptoms. For diagnosis the use of diets limited to a few foods and omitting those commonly taken, such as milk, wheat, eggs and potato, has been recommended.[6] Alexander[8] even tries starving the patient for a day or two; if symptoms diminish, one new article of food is given every forty-eight or seventy-two hours until symptoms reappear. The last food that has been added is then removed from the diet. If symptoms are relieved, the suspected food is given a second time with close observation of its effects. This careful testing and retesting and the complete elimination of all offending foods constitutes a fairly satisfactory method for the control of food allergies. However, the tests may be complicated by sensitization of the patient to proteins other than food proteins, as pollens or other inhalants.

Pollen sensitization has frequently been determined by the use of skin reactions. Food allergies cannot be definitely determined in this way. Schloss,[9] Spain,[10] O'Keefe[11] and Eyermann[12] have all reported cases of allergy in which one or more proteins giving negative skin reactions were nevertheless responsible for the symptoms. Alexander[8] asserts that in a given individual only certain tissues are receptive to allergens and that unless the skin is receptive no skin reaction can occur. He finds that the skin will react in about 50 per cent of asthmatic patients, the percentage being influenced by age, the method of acquiring sensitization and the nature of the foreign substance; that children react more surely than do adults; that inhalants give more reactions in adults than do foods, and that pollens are associated more often with skin reactions than other groups of allergens. Anthony[13] discusses fifty-seven patients for whom the cause of allergy could not be determined by means of intracutaneous reactions with water-soluble allergen extracts, and states that for forty-five of them there is definite evidence that reactions to allergen extracts depend on the reaction condition of the skin. On the other hand, Duke[3] finds that a patient is not made ill by all the foods to which he is actually sensitive and to which he gives positive skin tests, and Eyermann[12] confirms this finding.

Rowe has proved definitely that skin tests are not to be depended on entirely for diagnosis, in a report[6] of the cutaneous reactions of 175 patients to foods to which clinical sensitization existed. Frequently, less than 50 per cent of the patients sensitive to a given food gave positive skin reactions to it. Rowe believes that positive skin reactions to foods may indicate possible causes of allergic symptoms. However, the skin tests must be confirmed by use of "elimination diets" which exclude the indicated foods with relief of symptoms. He also believes that, when food allergy is suspected

TABLE 1.—*Diet 1* *

Material	Approximate Measure	Weight	Protein	Fat	Carbohydrate	Calories	Calcium	Phosphorus	Iron	Vitamins A	Vitamins B	Vitamins C
Corn (4)	1 cup, stewed	250 Gm.	7.0	3.0	47.5	245	0.015	0.258	2.0	+	+	+
Eggplant (2)	¾ cup, stewed											
	4 slices, ½ inch thick, 3 inches diam.	150 Gm.	1.8	0.5	7.7	42	0.017	0.051	0.8	+	+	..
Endive	⅔ small head, raw	100 Gm.	1.5	...	3.0	18	0.104	0.038	?	+	..	+
	1 cup, cooked	200 Gm.	3.0	...	6.0	36	0.208	0.076	...	..	..	..
Parsnips	1 cup, mashed	220 Gm.	3.5	1.1	29.7	143	0.130	0.167	1.3	..	++	..
Spinach	2 cups, raw	100 Gm.	2.1	0.3	3.2	24	0.067	0.068	3.6	+++	+++	+++
	1 cup, cooked	200 Gm.	4.2	0.6	6.4	48	0.134	0.136	7.2	+++	+++	+
Turnip, white (2)	Raw, 1½ small; ¾ cup diced	100 Gm.	1.3	0.2	8.1	39	0.064	0.046	0.5	..	++	++
	Cooked, 3 small, 1 cup diced, ¾ cup mashed	200 Gm.	2.6	0.4	16.2	78	0.128	0.092	1.0	..	..	..
Dates	10 stoned	64 Gm.	1.3	1.8	50.2	222	0.042	0.036	1.9	..	..	..
Lemon juice (3)	2 tablespoonfuls	26 Gm.	...	...	2.5	10	0.006	0.003	...	+	++	+++
Prunes (2)	6 whole	65 Gm.	1.2	...	40.4	166	0.030	0.058	1.7	++	++	—
Rhubarb sauce	1 cup thin	.....	0.9	1.1	61.5	255	0.067	0.047	1.5	..	..	+
Corn flakes	1½ cups	40 Gm.	3.4	0.3	34.8	156	0.007	0.076	0.4	..	—	—
Cornmeal mush	1 cup from 1/5 cup raw	30 Gm.	2.8	0.6	22.6	107	0.005	0.057	0.3	..	—	—
Corn pone (molasses)†	1-3 inches diameter, 3/8 inch thick	.....	2.4	3.8	21.4	130	0.012	0.049	0.5	..	+	—
Cornstarch	1 tablespoonful	8 Gm.	...	...	7.2	29	.....	.....	...	—	—	—
Hominy	1 cup cooked from ½ cup raw	95 Gm.	7.9	0.6	75.1	337	0.010	0.137	0.9	..	..	..
Gelatin	1 tablespoonful	½ oz.	13.0	0.2	....	52	.....	.....	...	—	—	—
Hazelnuts	30 meats, ¼ cup cut	25 Gm.	3.9	16.3	3.3	176	0.072	0.089	1.0	..	++	..
Lamb (3)	1 large lean loin chop	188 Gm.	30.1	22.7‡	....	325‡	0.017	0.324	4.5	..	+	—
	Roast—3 oz. cooked from	4½ oz.	24.5	21.1	....	288	0.014	0.264	3.7	..	+	—
Lentils	½ cup cooked from ¼ cup raw	50 Gm.	12.9	0.5	29.6	175	0.054	0.219	4.3	+	++	..
Mackerel	4 oz. raw	4 oz.	21.2	8.0	....	157	0.023	0.243	1.2	..	+	..
Corn oil	1 tablespoonful	12 Gm.	....	12.0	....	108	.....	.....	...	—	—	—
Bacon	3 slices	62 Gm.	6.5	20.1‡	....	207‡	0.004	0.070	0.9	..	+	—
Molasses	1 tablespoonful	22 Gm.	0.5	....	15.2	63	0.046	0.010	1.6	—	+	..
Sugar	1 tablespoonful = 3 teaspoonfuls = 1/16 cup	13 Gm.	...	....	13.0	52	.....	.....	...	—	—	—
Coffee (4); parsley; salt												

* Numbers in parentheses refer to incidents as allergens in Rowe's series. The values of the foods used in these diets have been obtained from many sources, the most important of which are: Sherman: Chemistry of Food and Nutrition; Rose: Laboratory Handbook for Dietetics; Joslin: The Treatment of Diabetes Mellitus, and Bulletin 28, U. S. Department of Agriculture.

† Molasses corn pone is prepared according to the following recipe: Cornmeal, 2 cups; oil, 3 tablespoonfuls; molasses, 2 tablespoonfuls; salt, ¼ teaspoonful; water, approximately ¾ cup. Mix cornmeal, salt, oil and molasses; pour on enough boiling water to make a stiff paste. Drop by spoonfuls on oiled sheets and bake in a moderate oven until well browned. This quantity makes twelve cakes, 3 inches in diameter and ⅝ inch thick.

‡ Corrected for loss in cooking and eating.

7. Duke (footnote 3). Peshkin, M. M.: Asthma in Children: I. Etiology, Am. J. Dis. Child. **31:** 763 (June) 1926. Cooke, R. A., and Van der Veer, A., Jr.: Human Sensitization, J. Immunol. **1:** 201 (June) 1916. Blackfan, K. D.: Cutaneous Reaction from Proteins in Eczema, Am. J. Dis. Child. **11:** 441 (June) 1916. Herman, H.: A Critical Study of Sixty-One Cases of Asthma and Eczema in Infancy and Childhood Controlled by Cutaneous Protein Sensitization Tests, ibid. **24:** 221 (Sept.) 1922.

8. Alexander, H. L.: Localized Allergy, M. Clin. North America **11:** 399 (Sept.) 1927.

9. Schloss, O. M.: A Case of Allergy to Common Foods, Am. J. Dis. Child. **3:** 341 (June) 1912.

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11. O'Keefe, E. S.: Protein Sensitivity in Children with Negative Cutaneous Reactions, J. A. M. A. **80:** 1120 (April 21) 1923.

12. Eyermann, C. H.: Food Allergy as the Cause of Nasal Symptoms, J. A. M. A. **91:** 312 (Aug. 4) 1928.

13. Anthony, A.: Skin Reactions in Asthma, Klin. Wchnschr. **6:** 2141 (Nov. 5) 1927; abst. J. A. M. A. **90:** 425 (Feb. 4) 1928.

and skin reactions are negative, "elimination diets" which exclude foods to which patients are most frequently sensitive will usually reveal the foods producing allergy. His data show the frequency of implication of seventy-seven foods in 556 incidents of food allergy in 175 patients.

The four "elimination diets" which Rowe uses are composed of from fourteen to sixteen foods selected from those which cause allergy least often. They vary in the cereals, meats, vegetables and fruits used. Final diet may be long, and meanwhile there is danger from a restricted diet. Rowe[14] himself says: "Such 'elimination diets' cannot be allowed for more than a week at a time because of the lack of satisfactory balance, especially in the vitamin and mineral salt content of such diets." The chief deficiency of his diets is in calcium, the most important source of which in the normal diet is milk.

Because Rowe's principle of study is sound and because his handling of "elimination diets" has been

TABLE 2.—*Diet 2*

Material	Approximate Measure	Weight	Protein	Fat	Carbohydrate	Calories	Calcium	Phosphorus	Iron	Vitamins A	Vitamins B	Vitamins C
Brussels sprouts	9 medium	200 Gm.	3.0	0.2	6.8	42	0.054	0.240	2.2	..	..	..
Okra	1 cup canned	225 Gm.	3.6	0.5	10.0	58	0.160	0.043	?	..	+++	..
Pepper, green (1)	1 small	50 Gm.	0.8	0.1	2.3	13	0.003	0.013	0.2	++	+	+++
Pumpkin	1 cup cooked (dry)	250 Gm.	2.0	0.5	18.8	88	0.058	0.148	2.0	+	+	+
Rutabaga	1 cup mashed from raw	230 Gm.	3.0	0.5	19.6	94	0.170	0.129	?	..	++	++
	1 cup diced from raw	200 Gm.	2.6	0.4	17.0	82	0.148	0.112	?	..	..	..
Swiss chard	1 cup cooked	200 Gm.	3.0	...	6.0	36	0.300	0.080	5.0?	++	+	..
Watercress	2 cups raw	100 Gm.	0.7	0.5	3.7	22	0.187?	0.005	1.9	+++	..	+++
Apricots (6)	9 halves + 5 tablespoonfuls juice	.....	1.3	0.3	36.0	152	0.017	0.030	0.4	..	..	..
Pears: canned	3 halves + 3 tablespoonfuls juice	133 Gm.	0.4	0.4	21.0	100	0.010	0.017	0.2	..	+	..
Pears: fresh	1 small	90 Gm.	0.5	0.4	11.4	50	0.014	0.023	0.3	..	..	..
Pineapple (3)	1 slice + 3 tablespoonfuls juice or ¼ cup shredded	.....	0.3	0.5	24.0	100	0.012	0.019	0.3	++	++	++
Raisins (3)	¼ cup	56 Gm.	1.5	1.8	42.6	193	0.036	0.074	1.2	—	+	—
Chicken (2)	1 second joint with bone	70 Gm.	18.5	7.0	....	137	0.011	0.199	2.8	..	..	..
	1 leg with bone	60 Gm.	16.0	6.0	....	118	0.009	0.172	2.4	..	..	..
	2 small slices (3 × 3 × ⅛ inch)	30 Gm.	8.0	3.0	....	59	0.005	0.086	1.2	..	..	..
Codfish	⅝ cup flaked	3 oz.	14.4	0.4	....	62	0.016	0.165	0.8	..	+	..
Gelatin	1 tablespoonful	½ oz.	13.0	0.2	....	52	.....	.....	...	..	..	..
Pecans	32 meats; ¼ cup shelled	40 Gm.	3.8	28.2	6.1	294	0.036	0.134	1.0	+	+	..
Rice, brown (1)	1 cup cooked from ⅔ cup raw	75 Gm.	6.0	0.1	59.0	263	0.008?	0.154	1.5	+	++	—
Rice flakes	1 cup	33 Gm.	3.3	0.1	27.1	123	?	?	?	—	—	—
Rice flour	1 tablespoonful	8 Gm.	0.6	....	6.3	28	0.001	0.008	0.1	—	—	—
Tapioca	1 tablespoonful minute	11 Gm.	...	....	9.7	39	0.003	0.001	0.2	—	—	—
Coconut oil	1 tablespoonful	12 Gm.	...	12.0	....	108	.....	.....	...	..	—	—
Maple syrup	1 tablespoonful	20 Gm.	...	....	14.3	57	0.021	0.003	0.6?	..	..	..
Sugar	1 tablespoonful	13 Gm.	...	....	13.0	52	.....	.....	...	—	—	—
Nutmeg; salt; tea (2)												

TABLE 3.—*Possible Substitutes for Foods in Diets 1 and 2**

Material	Approximate Measure	Weight	Protein	Fat	Carbohydrate	Calories	Calcium	Phosphorus	Iron	Vitamins A	Vitamins B	Vitamins C
A. Dandelion (0)	2 cups raw	100 Gm.	2.4	0.9	10.6†	61	0.105	0.072	2.7	++	++	+
Mustard (3)	2 cups raw	100 Gm.	2.4	0.3	4.5	30	0.220	0.066	5.6	..	..	..
B. Kale (0)	2 cups raw	100 Gm.	3.0	0.4	2.1	24	0.064	0.057	3.1	++	+++	..
Celery (7)	⅘ cup diced; 10 medium stalks	100 Gm.	1.1	0.1	3.3†	19	0.078	0.037	0.5	..	++	..
Kohlrabi (0)	¾ cup diced	100 Gm.	2.0	0.1	5.5	31	0.077	0.071	0.6	..	+++?	..
C. Asparagus (1)	4 stalks 8 inches long	100 Gm.	2.1	0.2	2.7	21	0.025	0.039	1.0	..	+++?	..
Beets (1)	1½ 2 inches diameter; ½ cup sliced	100 Gm.	1.6	0.1	9.7	46	0.029	0.039	0.6	+	+	+
String beans (2)	½ cup cooked	100 Gm.	2.3	0.3	7.4	42	0.046	0.052	1.1	++	++	..
D. Gooseberries (0)	¾ cup	100 Gm.	0.4	...	12.0	50	0.035	0.031	0.5	..	..	..
Raspberries (3)	¾ cup	100 Gm.	1.7	1.0	12.6	66	0.049	0.052	0.6	..	..	++
E. Kidney beans (0)	½ cup raw	100 Gm.	41.1	1.6	42.1	347	0.132	0.475	7.2	+	+++	..
Lima beans (2)	½ cup raw (dried)	100 Gm.	18.1	1.5	65.9	350	0.071	0.338	7.0	..	..	..
	1 cup raw (fresh)	100 Gm.	7.1	0.7	20.3	116	0.028	0.133	2.0	..	..	..

A. Substitute for endive (0), water cress (0), chard (0).
B. Substitute for okra (0), parsnips (0), rutabaga (0), spinach (0), turnip (2).
C. Substitute for Brussels sprouts (0) egg plant (2).
D. Substitute for rhubarb (0).
E. Substitute for lentils (0), fish (?).

* Figures in parentheses refer to number of times food appeared as allergen in Rowe's series of 556 incidents of allergy caused by seventy-seven foods among 175 patients.

† Includes fiber.

choice of the first test diet depends somewhat on the patient's history of food idiosyncrasies and on the indications of positive skin reactions. If symptoms are not relieved by use of the first diet for a period of from five to seven days, a second test diet is tried. Usually this is not necessary. If symptoms are relieved, one or two vegetables and fruits are added the second week; then meats, starches and other vegetables and fruits are added gradually in succeeding weeks, any foods which reproduce symptoms being excluded. The process of building up a normal varied eminently successful, his work has been used as a basis for the development of diets which are entirely adequate in protein, minerals and vitamins for adults, and in all the food factors except calcium and phosphorus for children. Even for those two elements the allowance is fair, although not optimum, as will be shown later.

We offer two diets (tables 1 and 2), composed of twenty-one and twenty-three articles, respectively. The

14. Rowe, A. H.: Food Allergy: A Common Cause of Abdominal Symptoms and Headache, Food Facts **3**, June 15, 1927.

diets are therefore more varied than the Rowe diets, but they are not necessarily more likely to include foods to which patients are sensitive. Diet 1 contains seven foods for which Rowe reports a total of twenty sensitizations in a series of 556 sensitizations among 175 patients. Diet 2 contains seven foods which gave a total of twenty-four sensitizations in the same series. The other foods used in these diets have not been reported as allergens by Rowe. (Several of them have been reported by other investigators.) The first of Rowe's "elimination diets" contains seven foods which he has found to be allergens thirty-six times in his series; the second nine foods, which have been allergens twenty-eight times; the third eight foods, with fifty sensitizations reported against them, and the fourth ten foods, with forty-two sensitizations.

Unlike the Rowe diets, the two that are offered here have no articles in common except salt, sugar and gelatin, to which sensitization has never been reported. If foods in the diets has been carefully considered. Green leaf vegetables are used in large amounts in both diets; molasses is used in one diet and maple syrup in the other. Other foods, such as filberts, rhubarb and turnips, have been included because they are fairly rich in calcium. In using the diets it must be remembered that meats, fish and cereal products are always deficient in calcium. The first two will be used in liberal amounts to meet the protein and phosphorus requirements of an adequate dietary. Their protein should be supplemented, however, with protein from nuts and lentils since the latter yield calcium as well.

The cereals will be used in amounts just sufficient to yield the necessary energy, to render the diets palatable and to limit the bulkiness of the foods. Fats will be reduced to a minimum since they are sources of energy alone.

Phosphorus will be provided in adequate amounts by the protein-rich foods, except gelatin, by the fruits and

TABLE 4.—*Menus for Diet 1*

Menu A	Menu B	Menu C	Menu D	Menu E
Breakfast				
Rhubarb, 1 cup	Mush, 1½ cups	Rhubarb, 1 cup	Mush, 1½ cups	Mush, fried, ¾ cup
Mush, white, 1 cup	Molasses, 3 tablespoonfuls	Fried mush, ¾ cup	Molasses, 3 tablespoonfuls	Bacon, 2 slices
Cornflakes, 1 cup	Dates, 10	Bacon, 2 slices	Dates, 10	Prunes, stewed, 8
Molasses, 3 tablespoonfuls	Coffee, 1 cup	Coffee, 1 cup	Coffee, 1 cup	Corn pone, 1
Coffee, 1 cup	Sugar, 1 teaspoonful	Sugar, 1 teaspoonful	Sugar, 1 teaspoonful	Coffee, 1 cup
Sugar, 1 teaspoonful	Lemonade, 1 glass	Corn pone, 1	Lemonade, 1 glass	Sugar, 1 teaspoonful
Lunch				
Lentil soup, 1 cup	Lamb broth, 1 cup	Fish chowder, 1 cup	Lamb broth, 1 cup	Lamb pie
Lentils, raw, ⅜ cup	Lamb, raw, 1½ oz.	Fish, 2 oz.	As in menu B	Lamb, 3 oz.
Bacon fat, ½ tablespoonful	Turnip, ½ cup	Hominy, fine, raw, 2 teaspoonfuls	Corn pone, 2	Gravy, ⅜ cup
Cornstarch, ½ teaspoonful	Cornstarch, 1 teaspoonful	Parsley, 1 tablespoonful	Endive, raw, 100 Gm.	Cornstarch, 1 teaspoonful
Parsley, 1 tablespoonful	Parsley, 1 tablespoonful	Endive, raw, 100 Gm.	Oil, lemon	Parsley, 1 tablespoonful
Spinach, raw, 100 Gm.	Corn pone, 1	Oil, lemon	Lemon whip with	Mush, 1 cup
Oil, lemon	Rhubarb and 1¾ cups	Corn pone, 1	nuts, 1½ cups	Endive, cooked, 1 cup
Corn pone, 1	cornmeal pudding	Prune pudding, ⅝ cup		Rhubarb sauce, 1 cup
Stuffed dates, 5		Nuts, ¼ cup		Cornflakes, ½ cup
Dinner				
Roast lamb, 3 oz.	Lentils, 1 cup	Lamb: large lean loin	Roast lamb, 4 oz.	Mackerel, 4 oz.
Mush, yellow, ½ cup	Bacon, 2 slices	chop, 1	Hominy, coarse, ½ cup	Oil, ½ tablespoonful
Gravy	Spinach, 1 cup	Hominy, ¾ cup	Gravy	Eggplant, ¾ cup
Salad	Salad	Gravy	Parsnips, mashed, 1 cup	Parsnips, 1 cup
Turnip, raw, ¾ cup	Turnip, raw, ¾ cup	Spinach, 1 cup	Spinach, 1 cup	Corn pone, 1
Nuts, ¼ cup	Dates, 10	Parsnips, 1 cup	Oil, 1 tablespoonful	Salad: turnip and nuts
Oil, lemon	Oil, lemon	Cornmeal and date	Prune-cornstarch	Cornmeal and date
Endive, ¾ cup	Coffee whip with	pudding, ¾ cup	pudding, ⅝ cup	pudding, ¾ cup
Bacon fat, ½ tablespoonful	nuts, 1 cup			
Stewed corn, ½ cup				
Corn pone, 1				
Lemon jelly, ½ cup				
Standards				
Protein, 70 Gm. 74	68	77	74	78
Fat..... 96	70	85	76	84
Carbohydrate..... 337	423	399	401	368
Calories: 2,500-2,600. 2,504	2,591	2,593	2,640	2,543
Calcium, 0.68..... 0.77	0.73	0.69	0.78	0.74
Phosphorus, 1.32..... 1.31	1.25	1.35	1.29	1.35
Iron, 0.015..... 0.026	0.031	0.023	0.026	0.018
Fruit and vegetables, 800.. 735	713	725	715	968

trial with both these diets used successively fails to relieve symptoms, it is probable that the symptoms are not due to allergy or else that the protein is effective by inhalation or contact rather than by ingestion. Of course, if the history of the patient suggests sensitization to any one of the articles in either diet, that article would not be employed in the preliminary tests. Possible substitutions within the diets are suggested in table 3.

In general, the Rowe principle of choice of foods has been followed. Wheat, eggs, milk and other foods which frequently cause allergy are eliminated. Unusual foods are used in preference to usual ones, although the diets are entirely practical. In some localities and at some times of the year a few substitutes may be necessary. Usually those foods which are not always fresh in the markets may be obtained in canned form.

Since diets lacking milk and cheese are almost always deficient in calcium, the calcium-content of vegetables and by brown rice. Iron will be liberally provided by the leafy vegetables. These will also give an abundance of vitamins A and B. Vitamin C will be provided in most significant amounts by lemon juice in diet 1 and green bell peppers in diet 2. The leafy vegetables which are used uncooked will be good sources of this vitamin and the cooked ones will be fair sources if cooking is not unduly prolonged. Detailed statements of the various food factors are given for the diet lists in tables 1 and 2.

Five menus (tables 4 and 5) have been prepared for adults from each diet list in order to show that it is possible to provide varied palatable meals which meet all nutritional standards for the five days during which the diets will normally be used without change or addition. Palatability must be considered, because few patients will force themselves to eat unpalatable food and restriction in amount taken will inevitably mean deficiency in one or more of the essential food factors.

The standards adopted for protein, phosphorus, calcium and iron are those recommended by Sherman [15] for dietaries in which each of these factors is considered, protein is good in quality, and energy and vitamin allowances are liberal. It must be remembered that deficiency in any factor may destroy the balance between all the others. This is particularly obvious in the case of protein and energy allowances; a deficiency in total energy allowance will result in the use of protein for energy and a consequent shortage of protein for tissue repair.

The Sherman standards are 50 per cent above the minimum requirements for maintenance in adults, as determined by many balance experiments. Presumably this extra allowance will cover variation in the composition of the foods and individual variations in their utilization. The standards are calculated for a "standard man" weighing 70 Kg. (154 pounds). All allowances, except energy, may be computed for an adult patient, man or woman, as proportional to the body weight. The energy allowance in these menus is low, approximating that of men in sedentary occupations. It has been felt that, if the calcium-phosphorus-protein requirements are met in the low-calory diets which are frequently desirable, it will be a simple matter to increase these diets for the use of more active patients by the addition of more fat and cereals.

In practice, diet 1 is prescribed as it stands, unless the history of the patient suggests elimination of one or more definite foods. In that case equivalent substitutions are made. If symptoms are not relieved after a period of five days, diet 2 is prescribed with similar attention to suggested idiosyncrasies of the patient.

If symptoms are relieved, milk is added to the diet with careful observation of its effect. If the adult is sensitive to milk, it is removed from the diet a second time. The patient is then allowed other foods, one being added at a time and preferably vegetables, another meat and then fruits being used. From three to four days are allowed between each addition when symptoms do not reappear; if they do, the suspected food is eliminated at once. Foods least likely to cause trouble are added first until a varied diet is attained. Then experimental addition is made of wheat, eggs, potatoes, chocolate, oranges, tomatoes and the other foods which frequently cause allergy.[6]

If the patient is not sensitive to milk, as shown by freedom from symptoms when it is added to the test diet, milk and cheese may be given and less insistence need be placed on molasses and leafy vegetables as sources of calcium.

However, enough vegetables and fruits should appear in the diet at all times to regulate elimination, since Hettwer and Kriz [16] have demonstrated by means of anaphylaxis experiments with guinea-pigs that unusual increase of intra-intestinal pressure as the result of stasis is an essential factor in the absorption of undigested proteins from the alimentary tract. In these menus the amount of bulky foods approximates 800 Gm., the amount recommended at the Mayo Clinic [17] for production of normal elimination.

For children suspected of suffering from food allergy the provision of milk-free diets adequate in calcium and phosphorus is an even more difficult problem than in the case of adults. The minimum requirements of these elements have not been determined; naturally there are wide variations among individuals according to rate of growth. Sherman and Hawley [18] have shown the optimum allowance of calcium for children from 3 to

TABLE 5.—*Menus for Diet 2*

Menu A	Menu B	Menu C	Menu D	Menu E
Breakfast				
Stewed raisins, ¾ cup	Stewed pears, 3 halves	Pineapple juice, ½ cup	Apricots, 9 halves	Apricots, 9 halves
Boiled rice, 1 cup	Juice, 3 tablespoonfuls	Steamed rice, 1¼ cups	Fried rice, 1 cup	Boiled rice, 1 cup
Maple syrup, 3 tablespoonfuls	Fried rice, 1 cup	Raisins, ¼ cup	Maple syrup, 3 tablespoonfuls	Maple syrup, 4 tablespoonfuls
Tea, if desired	Maple syrup, 3 tablespoonfuls	Tea, 1 cup	Tea, if desired	Tea, 1 cup
		Sugar, 1 teaspoonful		Sugar, 1 teaspoonful
Lunch				
Green pepper, 1 medium	Chicken gumbo	Chicken soup, 1½ cups	Chicken loaf	Fish gumbo
Rice, ½ cup	Chicken, 2 oz.	Chicken, 3 oz.	Chicken, 2 oz.	Fish, ⅝ cup
Rutabaga, diced, 1 cup	Okra, ½ cup	Tapioca, 1 tablespoonful	Gelatin, 1 teaspoonful	Okra, ½ cup
Apricot gelatin, 1 cup	Rice, boiled, 1 cup	Sprouts, 2	Pepper, small, ½	Rice, boiled, 1 cup
Pecans, ¼ cup	Watercress, 2 cups	Rice wafers, 3	Stock	Watercress, 1 cup
	Oil, 2 tablespoonfuls	Pumpkin, apricot, 1 cup	Watercress, 1 cup	Oil, 1 tablespoonful
	Maple tapioca, ½ cup	Maple-pecan brittle, 4 pieces	Oil, 1 tablespoonful	Rice wafers, 3
	Rice flakes, ½ cup	1½ oz.	Rice wafers, 2	Stewed raisins, ½ cup
			Rice-pecan pudding, ¾ cup	
Dinner				
Roast chicken	Cold chicken, 3 slices	Rice-fish loaf	Fricassee chicken	Codfish steak, 5 oz.
Second joint, 1	Sprouts, 9 medium	Rice, boiled, ¾ cup	Second joint, 1	Oil, 1 tablespoonful
Small slices, 3	Rutabaga, mashed, 1 cup	Fish, ⅝ cup	Small piece breast	Stuffed pepper
Steamed rice, ¾ cup	Salad:	Pepper, ¼	Boiled rice, 1 cup	Rutabaga, mashed, ¾ cup
Swiss chard, 1 cup	Pepper, ½ medium	Oil, 1 tablespoonful	Swiss chard, ¾ cup	Sprouts, 12 medium
Rice wafers*, 2	Pineapple, 2 slices	Swiss chard, ¾ cup	Rutabaga, diced, 1 cup	Pumpkin-pineapple, 1 cup
Pumpkin-Pineapple, 1 cup	Dressing	Oil, 1 tablespoonful	Pineapple-tapioca, ¾ cup	Pecan-maple brittle, 4 pieces
	Rice-raisin pudding, 1 cup	Rutabaga, mashed, 1 cup		1½ oz.
		Pear whip, 1 cup		
		Pecans, ¼ cup		
Standards				
Protein, 70..... 69	70	73	69	71
Fat..... 57	81	76	90	50
Carbohydrate..... 442	396	430	355	445
Calories: 2,500-2,600.....2,548	2,609	2,564	2,543	2,541
Calcium, 0.68..... 0.71	0.70	0.68	0.69	0.67
Phosphorus, 1.32..... 1.33	1.34	1.42	1.31	1.58
Iron, 0.015..... 0.021	0.019	0.021	0.021	0.017
Fruits and vegetables, 800 866	901	798	635	980

* Rice wafers are prepared according to the following recipe: Rice flour, ½ cup; salt, ¼ teaspoonful; fat, 1 tablespoonful; water, 2½ tablespoonfuls. Add salt to flour; work in the fat. Add cold water to make a stiff dough. Shape into small flat cakes, place on an oiled sheet and bake in a moderate oven until well browned (about 20 minutes). This amount makes four cakes 2½ inches in diameter. The wafers are most palatable when very fresh. Rice flour may be purchased for about 15 cents a pound in any Japanese food store under the name shinko.

15. Sherman, H. C.: Chemistry of Food and Nutrition, New York, Macmillan Company, 1926.

16. Hettwer, J. P., and Kriz, R. A.: Absorption of Undigested Protein from the Alimentary Tract as Determined by the Direct Anaphylaxis Test, Am. J. Physiol. **73**: 539 (Aug.) 1925.

17. Smith, F. H.: The Use of High Fat Diets for Constipation, J. A. M. A. **88**: 628 (Feb. 19) 1927.

18. Sherman, H. C., and Hawley, E.: Calcium and Phosphorus Metabolism in Childhood, J. Biol. Chem. **53**: 375 (Aug.) 1922.

13 years of age to be the amount contained in 1 quart of milk (1.17 Gm.). Not all of this calcium is stored by the growing child, but storage is greatest when this amount is included in the diet. From collected data these investigators conclude that the normal daily storage is highest in the second half of the first year, when it averages nearly 0.04 Gm. of calcium and nearly 0.03 Gm. of phosphorus per kilogram of body weight. At from 3 to 8 years the average daily storage becomes about 0.01 Gm. each of calcium and phosphorus per kilogram of body weight and continues at nearly this amount throughout the following years of rapid growth and development. The widest variaton from the average in their own experiments occurred with a girl of 12, who stored 0.023 Gm. of calcium per kilogram of body weight daily.

The completeness of utilization of calcium from different food sources is open to question. Sherman and Hawley found that the children with whom they worked did not store as much calcium when half of their intake came from carrots and spinach as they did when the same total amount came almost entirely from milk. On the other hand, Rose [19] has shown that the adult human being can maintain calcium balance on a moderate calcium intake (from 0.0056 to 0.0068 Gm. per kilogram of body weight), approximately 55 per cent of which comes from carrots. Blatherwick and Long [20] have also found that adults utilize the calcium and phosphorus of vegetables well.

Carefully controlled use of ultraviolet irradiation and the use of cod liver oil are desirable for children on these restricted diets in order that they may have every possible aid to efficient utilization of the calcium and phosphorus they receive.

It is possible to meet the calcium and phosphorus requirements of the organism by means of inorganic salts of these elements. This has been shown repeatedly in experiments with animals.[21] However, it must be remembered that an excessive phosphorus intake may impair calcium retention, and an excessive calcium intake may cause a loss of available phosphorus.[22] This finding is of particular importance in connection with the use of calcium salts in the treatment of allergic diseases, a use frequently recommended.[23] The value of calcium therapy for human beings has been questioned. Denis and Minot,[24] after giving 6 Gm. of calcium lactate to six individuals daily for a period of from six to ten days, concluded that calcium in the plasma could not be increased in this manner; they made one test for the element at the end of the experimental period. Salvesen, Hastings and McIntosh [25] also found that calcium lactate administration did not increase the calcium in the blood of two nephritic men; again tests were made at an interval of at least twenty-four hours after treatment. More recent work by a number of other investigators [26] has shown that calcium adminis-

TABLE 6.—*Menu for Boy of Three Years Based on Diet 1*

Material	Measure	Protein	Fat	Carbohydrate	Calories	Calcium	Phosphorus	Iron
Breakfast								
Rhubarb sauce	½ cup	0.5	0.6	30.8	128	0.034	0.024	0.8
Cornmeal mush	½ cup	1.4	0.3	11.3	54	0.003	0.029	0.2
Molasses	3 tablespoonfuls	1.5	...	45.6	189	0.138	0.030	4.8
Midmorning lunch								
Lemonade	1 tablespoonful juice, 2 teaspoonfuls sugar, 1 teaspoonful molasses	0.2	...	15.4	61	0.018	0.005	0.5
Corn pone	⅔	1.6	2.5	14.3	87	0.008	0.033	0.3
Dinner								
Lamb roast	1½ ounces, cooked	12.3	10.6	....	144	0.007	0.132	1.9
Parsnips	½ cup, mashed	1.8	0.6	14.9	72	0.065	0.084	0.7
Spinach	½ cup	2.1	0.3	3.2	24	0.067	0.068	3.6
Bacon fat	½ tablespoonful	...	6.0	....	54	.....	.....	...
Corn pone	½	1.2	1.9	10.7	65	0.006	0.025	0.3
Prunes, stewed	4	0.8	...	26.9	111	0.020	0.039	1.1
Supper								
Lentil soup	¾ cup							
Lentils, cooked	⅜ cup	9.7	0.4	22.2	131	0.041	0.164	3.2
Bacon fat	1 teaspoonful	...	4.0	....	33	.....	.....	...
Cornstarch	1 teaspoonful	...	...	2.4	10	.....	.....	...
Corn pone	½	1.2	1.9	10.7	65	0.006	0.025	0.3
Cornmeal and date pudding	⅜ cup	1.9	2.7	32.1	160	0.056	0.039	2.0
Cod liver oil	1 tablespoonful	...	12.0	....	108	.....	.....	...
Totals		36.2	43.8	240.5	1499	0.469	0.697	19.1
Standards:								
(Weight of boy: 32¼ pounds = 14.7 Kg.)		32.3 (*a*)	44.1 (*b*)		1593 (*c*)	A 0.212 B 0.433 C 0.683	0.332 0.626	10 to 15 mg.

(*a*) 1 Gm. per pound of body weight (Rose, footnote 29).
(*b*) 3 Gm. per kilogram of body weight (Holt, Courtney and Fales, footnote 30).
(*c*) 43.2 calories per pound of body weight (Gillett, footnote 28).

19. Rose, Mary S.: Experiments on the Utilization of the Calcium of Carrots by Man, J. Biol. Chem. **41:** 349 (March) 1920.

20. Blatherwick, N. R., and Long, M. L.: The Utilization of Calcium and Phosphorus of Vegetables by Man, J. Biol. Chem. **52:** 125 (May) 1922.

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22. Orr, W. J.; Holt, L. E.; Wilkins, Lawson; and Boone, F. H.: The Relation of Calcium and Phosphorus in the Diet to the Absorption of These Elements from the Intestine, Am. J. Dis. Child. **28:** 574 (Nov.) 1924.

23. Luttinger, P.: Calcium Therapy in Diseases of Children, Arch. Pediat. **45:** 341 (June) 1928. Sterling, A.: The Value of Phosphorus and Calcium in Asthma, Hay-Fever and Allied Diseases, J. Lab. & Clin. Med. **13:** 997 (Aug.) 1928.

24. Denis, W., and Minot, A. S.: Effects of Feeding with Calcium Salts on the Calcium Content of the Blood, J. Biol. Chem. **41:** 357 (March) 1920.

25. Salvesen, H. A.; Hastings, A. B., and McIntosh, J. F.: The Effect of the Administration of Calcium Salts on the Inorganic Composition of the Blood, J. Biol. Chem. **60:** 327 (June) 1924.

26. Hjort, A. M.: The Influence of Orally Administered Calcium Salts on the Serum Calcium of Normal and Thyreoparathyroprivic Dogs, J. Biol. Chem. **65:** 783 (Oct.) 1925. Kahn, B. S., and Roe, J. H.: Calcium Absorption from the Intestinal Tract in Human Subjects, J. A. M. A. **86:** 1761 (June 5) 1926. Bauer, Walter; and Ropes, Marian W.: The Effect of Calcium Lactate Ingestion on Serum Calcium, ibid. **87:** 1902 (Dec. 4) 1926. Roe, J. H., and Kahn, B. S.: Absorption of Calcium from the Intestinal Tract of Human Subjects, ibid. **88:** 980 (March 26) 1927. Bock, A.: Absorption of Orally Administered Calcium in Pregnancy, Arch. f. Gynäk. **131:** 28 (Oct. 15) 1927.

tration may increase the serum calcium at least temporarily; tests were made at intervals of from one to three hours after ingestion; in many cases the blood calcium level returned to normal after twelve hours.

Two menus based on diet 1 (tables 6 and 7) are given to show the difficulty involved in providing enough calcium and phosphorus for children from food sources alone. Typical children of 3 and 9 years of age have been considered. Their weights have been taken from tables prepared for the Children's Bureau, United States Department of Labor, and for the American Child Health Association, and reprinted by Rose.[27] Energy standards are those suggested by Gillett.[28] Protein standards are taken from Rose;[29] it will be noted that they lie within the range obtained when protein is estimated to yield from 10 to 15 per cent of the calories.

Calcium and phosphorus standards are not considered optimum. In each case an allowance for the maintenance of body tissue has been derived by computation on the basis of body weight from the Sherman figures[15] for minimum requirement. This maintenance allowance has been added to each of three possible allowances for storage of the elements in growth. Standard A uses the average figures for storage reported by Sherman and Hawley,[18] 0.01 Gm. per kilogram of body weight daily for both calcium and phosphorus; on this basis, the diets approximately double the amounts absolutely necessary. Standard B uses the highest figure for calcium storage found by Sherman and Hawley in their series of children from 3 to 13 years of age; on this basis the diet for the 3 year old meets the total requirement, while that for the 9 year old exceeds it by 20 per cent. Standard C uses the highest reported figure for storage, 0.04 Gm. of calcium and 0.03 Gm. of phosphorus per kilogram of body weight; this storage was found in the second half of the first year and is undoubtedly greater than that of older children; the diets meet the total requirement of phosphorus calculated on this basis but do not meet the calcium requirement.

Holt, Courtney and Fales,[30] like Sherman, set a higher standard for calcium than that attained in these diets. In a small group of children ranging in age from 1 year to 7 years 5 months, they found that an intake of at least 0.09 Gm. of calcium oxide (0.06 Gm. of calcium) per kilogram of body weight was necessary; with this or a higher intake, the average absorption was 0.055 Gm. of calcium oxide (0.04 Gm. of calcium) per kilogram of body weight. Their observations would indicate an allowance of at least 0.88 Gm. of calcium for the 3 year old boy, of which 0.59 Gm. would be absorbed.

If the use of diet 1 relieves symptoms of allergy in the child, milk should be added to the diet experimentally. If symptoms do not reappear, 1 quart of milk a day should be allowed. Molasses and leafy vegetables may be reduced in quantity. However, since they are excellent sources of iron and fair sources of phosphorus, and since the latter are especially valuable for vitamin A, they should not be eliminated from the diet entirely.

If the child is sensitive to milk, immediate measures should be taken to enable him to use this essential food. Desensitization by feeding has not been successful in Rowe's[4] hands; Sanford,[5] also, has not had marked success in attempts to desensitize, although he uses the method of feeding small amounts with gradual increase in dosage when the allergen is wheat.[31] Many other investigators have reported success in using oral desensitization measures. For case reports and technic, reference should be made to their papers.[32]

TABLE 7.—*Menu for Boy of Nine Years Based on Diet 1*

Material	Measure	Protein	Fat	Carbohydrate	Calories	Calcium	Phosphorus	Iron
Breakfast								
Rhubarb sauce	1 cup	0.9	1.1	61.5	255	0.067	0.047	1.5
Cornmeal mush	1 cup	2.8	0.6	22.6	107	0.005	0.057	0.3
Molasses	3 tablespoonfuls	1.5	...	45.6	189	0.138	0.030	4.8
Dinner								
Lamb	3 ounces, cooked	24.5	21.1	....	288	0.014	0.264	3.7
Endive, cooked	150 Gm.—¾ cup	2.3	....	4.5	27	0.156	0.057	?
Parsnips	1 cup	3.5	1.1	29.7	143	0.130	0.167	1.3
Gravy	½ teaspoonful cornstarch	...	...	1.2	5	.....	.....	...
	1 teaspoonful fat	...	4.0	...	36	.....	.....	...
Cornmeal and date pudding	¾ cup	3.3	5.3	54.0	277	0.082	0.072	3.0
Lemon sauce	1 tablespoonful lemon juice	...	...	1.3	5	0.003	0.002	...
	1 tablespoonful molasses	0.5	...	15.2	63	0.046	0.010	1.6
	½ teaspoonful cornstarch	...	...	1.2	5	.....	.....	...
Supper								
Cornmeal and lentil loaf	1 cup	14.3	5.8	40.9	274	0.057	0.248	4.5
Spinach, cooked	200 Gm.—1 cup	4.2	0.6	6.4	48	0.134	0.136	7.2
Bacon fat	1 teaspoonful	...	4.0	....	36	.....	.....	...
Turnips, mashed	¾ cup	2.6	0.4	16.2	78	0.128	0.092	1.0
Prune pudding with nuts	¾ cup	6.9	24.5	102.2	656	0.136	0.186	2.5
Totals		67.3	68.5	402.5	2492	1.096	1.368	31.4
Standards:								
(Weight of boy: 64 pounds = 29 Kg.)		64.0 (*a*)			2362 (*b*)	A 0.478 B 0.856 C 1.351	0.657 1.239	15 mg.

(*a*) 1 Gm. per pound of body weight (Rose, footnote 29).
(*b*) 80 calories per pound of body weight (Gillett, footnote 28).

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Disturbances of the gastro-intestinal tract should be guarded against, since they augment the possibility of absorption of undigested protein.[33]

Denaturation of the milk protein by boiling may be helpful in some cases. Schloss[32] finds it so. Wells,[34] dealing with true anaphylaxis in guinea-pigs, found that heating milk to 100 C. for twenty-five minutes did not destroy its intoxicating effect.

If boiled or pasteurized milks are used, their coagulability by rennin will be diminished. This is sometimes advantageous. Hill[35] has found that the curd of unboiled milk is approximately three times as hard as that from boiled milk. If it is considered disadvantageous, coagulability may be restored by addition of calcium chloride or hydrochloric acid.[36]

Milk may be given in the form of junket, if there is any question of its coagulation in the stomach. Sansum,[37] in discussing food sensitization, states that rennin is rarely absent from the stomach. However, optimum acidity for its action may not obtain, the range for activity being given as p_H 6.3 to p_H 6.0 by Faber.[38] In this case unaltered milk proteins may be carried into the intestine with consequent opportunity for their absorption before digestion.

Milk acidified by the action of lactic acid bacteria or by the addition of acid may be used. With many individuals, such milk undergoes more complete gastric digestion than does fresh cow's milk.[39] Peptonized or pancreatinized milk may also be used. Sansum[37] administers pancreatin tablets (enteric coated) to increase rapidity of digestion in the intestine.

Sometimes a food taken in large quantity or taken by itself will produce symptoms of allergy, whereas it is ineffective when taken in small amounts or with other foods.[40] For this reason better results may be obtained if a small amount of milk, preferably dried, is mixed thoroughly with cereal and the mixture is then well cooked in water and served without additional milk.

SUMMARY

1. The two diet lists offered here may be used as the basis of adequate diets for the identification of food allergies.

2. Five menus have been prepared from each diet list which provide adequate amounts of protein, minerals and vitamins for the adult and which may be modified readily to meet his energy requirements.

3. Two menus have been prepared which show the adequacy of these diets for children in all factors except calcium and phosphorus, the utilization of which and of milk is considered separately.

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33. Schloss, O. M., and Worthen, T. W.: The Permeability of the Gastro-Enteric Tract of Infants to Undigested Protein, Am. J. Dis. Child. **11:** 342 (May) 1916. Schloss, O. M., and Anderson, A. F.: Allergy to Cow's Milk in Infants with Severe Malnutrition, Proc. Soc. Exper. Biol. & Med. **20:** 5, 1922.

34. Wells, H. G.: Studies on the Chemistry of Anaphylaxis: III. J. Infect. Dis. **9:** 147 (Sept.) 1911.

35. Hill, R. L.: Physical Curd Character of Milk and Its Probable Relation to Infant Nutrition, Circ. 66, Utah. Agric. Expt. Sta., 1927, p. 1; Chem. Abst. **22:** 2399 (July 10) 1928.

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38. Faber, H. K.: Hydrochloric Acid Milk in Infant Feeding, Am. J. Dis. Child. **26:** 401 (Nov.) 1923.

39. Hess, J. H.; Koch, E. M., and Sennewald, Z. C.: Peptic Digestion of Cow's Milk, J. A. M. A. **87:** 1360 (Oct. 23) 1926.

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BLOOD CHANGES IN VICTIMS OF THE CLEVELAND CLINIC FILM DISASTER *

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In view of the editorial comment [1] on the hazard of toxic gases formed in the combustion of roentgen films, the blood changes observed in several victims of the Cleveland Clinic disaster who were alive on the second day may be of interest.

The patients gassed in the Cleveland Clinic disaster can be divided into two groups: those who died almost immediately, and those in whom the symptoms were delayed for several hours. No specimens of blood were obtained by us from the former, who succumbed probably to the additive effects of carbon monoxide, nitric fumes and possibly cyanide gases. The events in the second group, the patients with delayed effects, correspond in the main closely to those described by Wood [2] in 1912, who reported observations on nine patients and a number of experimental animals poisoned by the inhalation of nitric fumes. This group of clinic patients became practically free from any symptoms on going into the open air after being gassed, only to succumb from six to eight hours later to a sudden attack of dyspnea and cyanosis. The majority of the patients died in from six to forty-eight hours, but a number died of pneumonia days or weeks later. Very few of those who had any notable degree of edema recovered. At autopsy the lungs showed a tremendous edema, which no doubt was a paramount factor in the blood changes observed. The specimens which we have the privilege to report were obtained through the kindness of the staffs of Mount Sinai Hospital and Cleveland Clinic Hospital. The blood was drawn from the arm vein on the second and third days after the poisoning. As with the results reported by Underhill [3] in phosgene poisoning, it was evident that changes in blood concentration occurred. The venous blood had assumed a sticky, concentrated consistency which made the drawing of the sample more or less difficult. An indication of the degree of concentration may be obtained from the total pigment column of table 1. The total pigment is reported in terms of per cent by volume, as the determination was made by standardization against oxygen capacity values obtained with the Van Slyke apparatus. In every instance, if 20 per cent by volume is assumed to be the normal oxygen capacity, there is an increased concentration of hemoglobin which in the extreme case (patient 4) amounts to 78 per cent. Since the water content of the plasma is normal or high, it would appear that the concentrated character of the blood is wholly an increase in the concentration of cells. The complete explanation of the polycythemia is not entirely clear, although it would appear to be a direct or indirect consequence of the pulmonary edema. An indirect factor is the action of anoxemia on the number of red

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1. The Hazard of Toxic Gases from Combustion of Roentgen-Ray Films, editorial, J. A. M. A. **92:** 1764 (May 25) 1929; The Cleveland Disaster, ibid. **92:** 1767 (May 25) 1929.

2. Wood, F. C.: Poisoning by Nitric Oxide Fumes, Arch. Int. Med. **10:** 478 (Nov.) 1912.

3. Underhill, F. P.: Physiological Action of Phosgene, Chlorine and Chloropicrin, in the Medical Department of the United States Army in the World War **14,** Medical Aspects of Gas Warfare, 1926, chapter X, p. 307.

blood cells namely, the prompt increase in response to oxygen want, as a result of low barometric pressure, which has long been recognized (reviewed by Schneider [4]) and is explainable largely on the basis of contraction of the spleen (Barcroft [5]). These patients had all been treated with oxygen inhalation and some had been bled and given an injection of saline solution.

It was suggested by Wood [2] that a possible explanation of the dark appearance of the blood might lie in the formation of methemoglobin, the methemoglobin being formed in the blood as a result of the presence of a small amount of sodium nitrite. With this possibility in mind, oxygen capacity values as obtained with the latest form of the Van Slyke manometric gas analysis apparatus, and the total pigment values as obtained by Stadie's method, were compared. As can be seen from table 1, the oxygen capacity and total pigment values agreed except in case 3 on May 16. This sample had been left standing several hours before the oxygen capacity determinations were made and the second sample from the same patient, obtained May 17, showed agreement between the oxygen capacity and total pigment. It therefore appears that no abnormal pigment—methemoglobin, carboxyhemoglobin or cyanhemoglobin—was present in these samples of blood. The carbon monoxide had presumably been excreted by this time. However, had any material amount of methemoglobin been formed it should still have been present.

TABLE 1.—*Oxygen Capacity and Total Pigment of Blood*

Case	Ultimate Fate	Date of Blood Specimen*	Oxygen Capacity, per Cent by Volume	Total Pigment† per Cent by Volume	Oxygen Content per Cent by Volume	Oxygen Unsaturation per Cent	Plasma H_2O Cc. per 1,000 Cc.
1	Died 5/21/29 (6:30 a. m.)	5/16 (12 noon)	28.67	27.42	.....	..	...
2	Died 5/16/29 (12 noon)	5/16 (5 p. m.)	23.85	23.60	<6.17	>74	...
3‡	Died 6/13/29 (4 a. m.)	5/16 (12 noon)	23.70	26.50	14.15	47	...
		5/17 (8:30 a. m.)	21.89	21.46	9.36	57	941
4	Died 6/10/29 (noon)	5/17 (5:30 p. m.)	.....	35.74	12.39	65	948
5	Recovered	5/17 (5:30 p. m.)	.....	28.80	3.97	86	958
6	Died 5/18/29 (11:45 p. m.)	5/17 (5:30 p. m.)	.....	21.46	4.09	81	...
7	Died 5/18/29 (noon)	5/17 (5:30 p. m.)	.....	21.45	9.86	54	...

* The disaster occurred at 11:31 a. m., May 15.
† In terms of oxygen capacity. This may be multiplied by 0.746 to convert it into hemoglobin, grams per hundred cubic centimeters.
‡ This sample stood several hours before oxygen capacity determinations were made.

Spectrophotometric observations made with a Keuffel and Esser color analyzer confirmed the observations made by the Stadie method, if the readings were made promptly after the blood had been laked. In every case the data were those of oxyhemoglobin. Within a few minutes after laking, however, methemoglobin began to appear. This reaction is best exemplified by the data recorded on the blood of patient 1. This gave a normal hemoglobin reading directly after laking; ten minutes later the data indicated 12.2 per cent methemoglobin, and in twenty minutes the concentration of methemoglobin had reached 50.4 per cent. This change was noted to a varying degree in the other samples of blood examined. A similar effect has been noted in the blood of mice exposed to fumes produced from the tarry residue scattered throughout the clinic building. These fumes are extremely toxic and the animal may collapse in less than one minute. The blood in one experiment was found to contain 40 per cent methemoglobin five minutes after laking; thirteen minutes later the concentration rose to 69 per cent. The final reading, thirty minutes after laking, showed that 83 per cent of the hemoglobin had been changed to methemoglobin. It is apparent that the blood, both of the patients and of the mouse, contained a substance capable of reacting with the hemoglobin released from laked cells. This reaction and the toxic nature of the tar are under investigation.

It will be noted from table 1 that there is a marked unsaturation of the venous blood, quite similar to that observed by Stadie [6] in cases of fatal pneumonia. The same condition was observed by Underhill [3] in phosgene poisoning in dogs. As he pointed out, this unsaturation might be caused by the edema preventing adequate oxygen exchange in the pulmonary blood, or it might be the result of blood concentration, which would cause poor circulation, which in turn would lower the oxygen content of the venous blood. He inclined to the view that blood concentration is the chief cause of oxygen unsaturation and the immediate cause of death, and therefore his principal aim in the treatment of phosgene poisoning was to prevent blood concentration by means of saline injections. However, if blood concentration were indeed the essential factor in preventing oxygen saturation of the blood, then the greatest unsaturation would be found in the patients with the greatest total pigment, and vice versa. It will be noted in table 1 that there was not such parallelism. For instance, patient 4, with an oxygen capacity of 35.74 per cent by volume, showed 65 per cent unsaturation while patient 6, with a capacity of 21.46 per cent by volume, showed 81 per cent. These results would indicate that blood concentration is not the chief factor in producing unsaturation. Undoubtedly edema and lung tissue destruction played an important part and an indeterminate amount was probably due to slowing of the circulation through depression of the heart and vessels by the prolonged deficient oxygen supply, and perhaps through toxic shock from the absorption of protein cleavage products from the corroded lungs.

TABLE 2.—*Values of the Hydrogen Ion, Carbon Dioxide Content and Chlorides of the Plasma*

Case	Date	p_H	Carbon Dioxide Content Plasma per Cent by Volume	P_{CO_2} Milligrams of Mercury*	Plasma Chlorides, Percentage
6	5/17	7.43	62.50	38.3	0.560
3	5/17	7.60	70.32	30.3	0.537
5	5/17	7.50	77.48	41.7	0.574
7	5/17	7.43	55.10	34.6	.....
4	5/17	7.44	66.6	40.9	0.565

* The carbon dioxide tension, calculated from p_H and bicarbonate carbon dioxide that would exist over the blood. This is expressed in millimeters of mercury. The normal is about 40.

Table 2 gives the values of the p_H, carbon dioxide content and chlorides of the plasma. In two of the five samples of blood, both the p_H and the carbon dioxide content were definitely elevated above the normal. Since both the p_H and the carbon dioxide are elevated, these two cases represent a condition of uncompensated alkalosis. It is not clear why the p_H should be elevated when there is oxygen-want. In three of four specimens of blood in which the plasma chloride was determined, this showed a definite lowering similar to that in ordinary pneumonia.

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THE RADICULAR SYNDROME IN HYPERTROPHIC OSTEARTHRITIS OF THE SPINE

ROOT PAIN AND ITS DIFFERENTIATION FROM HEART PAIN *

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Cutaneous pain may be the expression of a pathologic process in the posterior nerve roots. The process is manifested at the periphery in the region that contains the sensory receptors for the involved roots. The referred pain of visceral origin may also be perceived in the external surfaces that contain sensory receptors of spinal roots. The latter pain is the expression of an abnormal stimulation of a viscus through a reflex arc that includes the posterior nerve roots.[1] It is obvious, therefore, that the pain of root-zone distribution associated with hypertrophic osteoarthritis of the spine[2] might readily be confused with the pain of abnormal visceral stimulation that is perceived within the same dermatomes. That the differentiation of pain over the precordium[3] is not always easy was remarked by Mackenzie,[4] who pointed out that the pain in the viscerosensory reflex associated with organic disease of the heart and the pain of similar distribution not associated with organic disease of the heart may resemble each other so closely that sometimes differences can be detected only by watching the progress of the case.

The more recent classifications of heart pain[5] generally fail to recognize the fact that "pain over the heart" can be a manifestation of a pathologic process in the posterior spinal nerve roots whose receptors lie in the cutaneous area over the left side of the chest, and yet in our experience such pain has been of common occurrence. In addition to the viscerosensory reflex of cardiac origin, it is recognized that precordial pain may be due to other causes, such as the involvement of the posterior nerve roots in erosion of the bodies of the dorsal vertebrae from aneurysm or tuberculosis, or the involvement of the pain tracts by new growths of the vertebrae and the spinal cord. Likewise, the severe pointlike lancinating precordial pain described by Kilgore[6] and the vasovagal storms of Allbutt[7] are conditions warranting recognition but need not receive further consideration here.

THE PRESENT STUDY: ITS AIM AND SCOPE

The present study, conducted in the medical and cardiac clinics of the University of California Medical School, concerned a group of fifty patients suffering from hypertrophic osteoarthritis of the upper part of the dorsal spine, whose chief complaint was pain over the chest and over the precordium[3] in the distribution of the first to the fifth or sixth dorsal roots. Part of this group was included in an earlier report, a total of seventy patients having been observed without respect to the region involved. The description of the syndrome is based on a detailed analysis of these case histories.

THE LOCATION OF PAIN AND ITS DELINEATION

As a rule, the patients with pain in the distribution of the upper dorsal roots referred to symptoms "over the heart" and "between, or in, the shoulder blades." Although in most instances the radicular pain was bilateral, the complaint was chiefly of one side. The frequency of the side seemed to be related to the knowledge possessed by the patient of the location of an organ; the right side over the abdomen, gallbladder and

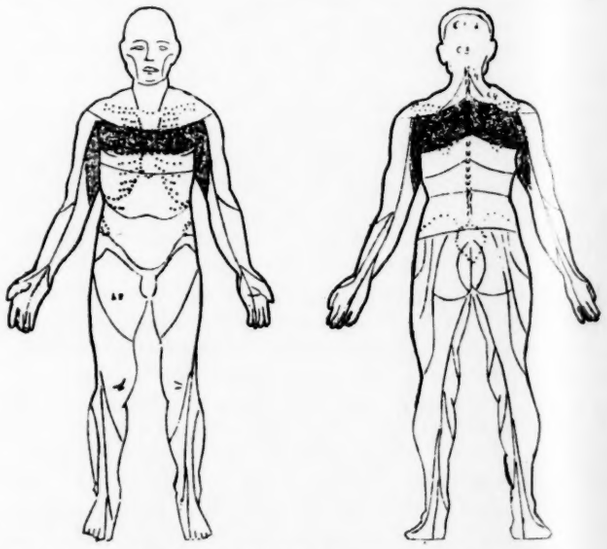

Fig. 1.—The distribution of subjective sensory disturbances with incomplete radiation down the inner side of the arms. The objective sensory disturbances were distributed according to the entire bilateral distribution of the upper five dorsal dermatomes.

appendix regions and the left side over the heart received the most attention. The bilateral nature of the pain and its radiation was for the most part readily brought out by questioning.

Symptoms in this group of cases were confined to the bandlike zone between the second and the fifth or sixth interspaces on the front of the chest, continuous with a similar zone posteriorly between the levels of the spines of the scapulae above, the angles of the scapulae below, and the zone in the axilla, the inner side of the arm and forearm to the little finger (figs. 1, 2 and 3). These areas constitute the topographic distribution of the first to the fifth or sixth dorsal posterior roots. A smaller group of patients also complained of "heart pain" when symptoms were present in the zone below the breast between the fifth or sixth to the eighth or ninth interspaces with a corresponding area posteriorly from below the angles of the scapulae to the level of the ninth or tenth spines, in the topographic distribution of the fifth or sixth to the eighth or ninth dorsal dermatomes. According to frequency, the most common

* From the Department of Medicine, University of California Medical School.

1. Pottenger, F. M.: Symptoms of Visceral Disease, ed. 3, St. Louis, C. V. Mosby Company, 1925, pp. 53, 167.
2. Gunther, Lewis: The Radicular Syndrome in Hypertrophic Osteo-Arthritis of the Spine, California & West. Med. **29**: 152 (Sept.) 1928. Gunther, Lewis; and Kerr, W. J.: The Radicular Syndrome in Hypertrophic Osteo-Arthritis of the Spine: Analysis of Thirty Cases, Arch. Int. Med. **43**: 212 (Feb.) 1929.
3. Precordium is defined by Gould's Medical Dictionary (edited by J. E. P. Scott, Philadelphia, P. Blakiston's Son & Co., 1926) as (1) a name applied by the ancients to the diaphragm, the thoracic viscera, or the epigastric region; (2) the area of the chest overlying the heart. In this paper the term precordium will be used according to the second definition. The use of this term is discussed by Allbutt, T. C.: Diseases of the Arteries, Including Angina Pectoris, London, Macmillan Company **2**: 281-285, 1915.
4. Mackenzie, James: Angina Pectoris, London, Oxford Medical Publications, 1923, p. 167.
5. White, P. D., and Wood, J. E.: Classification of Heart Pain, J. A. M. A. **81**: 539 (Aug. 18) 1923. Musser, J. H.: Theophylline Ethylenediamine in Heart Disease Associated with Pain, J. A. M. A. **91**: 1242 (Oct. 27) 1928.
6. Kilgore, E. S.: Angina Pectoris and Pseudo-Angina: A Clinical Study with Special Reference to Lancinating Pain, J. A. M. A. **87**: 455 (Aug. 14) 1926.
7. Allbutt: Diseases of the Arteries, pp. 227-229.

specific zones were: 1. Across the front and the back of the chest encircling it in a broad band (fig. 1). 2. Across the front and back of both sides of the chest, but particularly over the heart, in a broad bandlike zone with radiation to the left armpit, the inner side of the left arm and the inner side of the left forearm as far as the fingers on the ulnar side. Complete radiation to the fingers was not always present (fig. 2). This

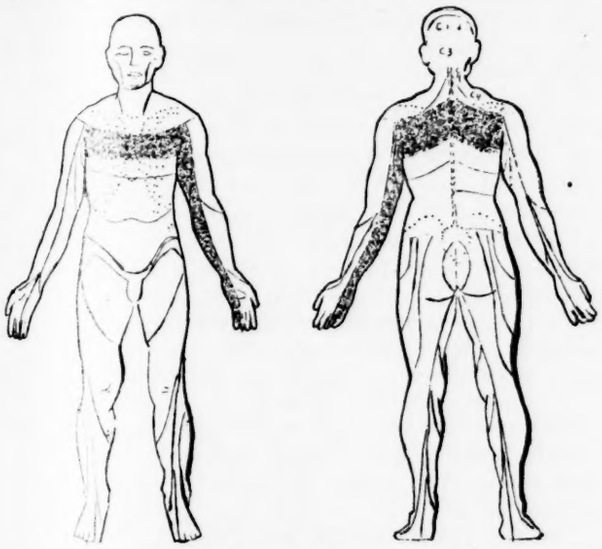

Fig. 2.—The distribution of sensory disturbances with complete radiation down the inner side of the arm. The objective sensory alterations were distributed according to the entire bilateral distribution of the upper five dorsal dermatomes.

variety most closely resembled the pain of the viscerosensory reflex of cardiac origin. 3. Across the left side of the chest only, with a unilateral radiation, in a broad band to the back, with or without radiation into the left arm (fig. 3).

The radiation of the pain varied characteristically in the same person. Sometimes it began over the precordium and radiated to the back and into the arm, and at another time it began posteriorly and radiated forward to the chest around each side, and into the arms. Radiation down the inner side of the right arm was of less frequent occurrence than down the left arm.

RADIATION

The viscerosensory reflex due to organic disease of the heart may sometimes be associated with pain in the neck. The exact mechanism is not clear. Mackenzie [8] considered the pathway through the vagus and thence through the sensory nerves "that supply those regions." Pottenger [9] considered the pathway through the intercalated neurons to mediate with the spinal nerves emerging from the second, third and fourth cercival segments. In the patients with radicular pain, radiation did not occur from the precordium directly to the side of the neck, to the occiput or to the jaw in any instance. No autonomic nervous phenomena, such as salivation, sweating and desire to urinate, which are frequently observed with angina pectoris, were seen. Naturally, it is necessary to remember that the radicular syndrome may occur from ostearthritis of the cervical, as well as the dorsal, vertebrae. Under such circumstances neck pain had a characteristic radiation.

The patient who had symptoms on the side of the neck also complained of pain "up and down the back of the neck," and radiation occurred over the shoulder to the outer side of the arm. Such symptoms existed sometimes in association with and at other times apart from the precordial pain. The complaint of pain at the occiput was spoken of as "headache," and this headache radiated in a characteristic fashion to the top of the head. Similar to the neck pain, it occurred independently of or concomitantly with symptoms over the precordium. In the first group, i. e., the patients with symptoms in the areas over the side of the neck and the back of the neck and shoulders, the pain was associated with ostearthritis of the fifth to the sixth or seventh cervical vertebrae, and in the second group, i. e., the patients with symptoms of occipital and vertex headache, pain was associated with ostearthritis of the second or third cervical vertebrae, or of both. The patient did not associate the neck and occipital and vertex symptoms directly with the "heart" symptoms, except to note the similarity of the nature of the pain and of the factors that induced and aggravated symptoms, even when they were present at different times.

The extent of the painful area was quite accurately localized, in fact, with anatomic precision, regardless of the region involved. Over the chest, the patient did not have any difficulty in delineating the upper and lower boundaries of his subjective sensations, or the extent of their radiation. One was impressed by the accuracy of localization of the pain of root origin associated with hypertrophic ostearthritis, as contrasted with the blurred border or absolute vagueness of the localization of the pain manifested in the viscerosensory reflex of cardiac origin in the same region. As shown before, a spread of the pain on the chest anteriorly (over the heart) to contiguous roots without first involving the distribution of the same roots posteriorly was not a feature of

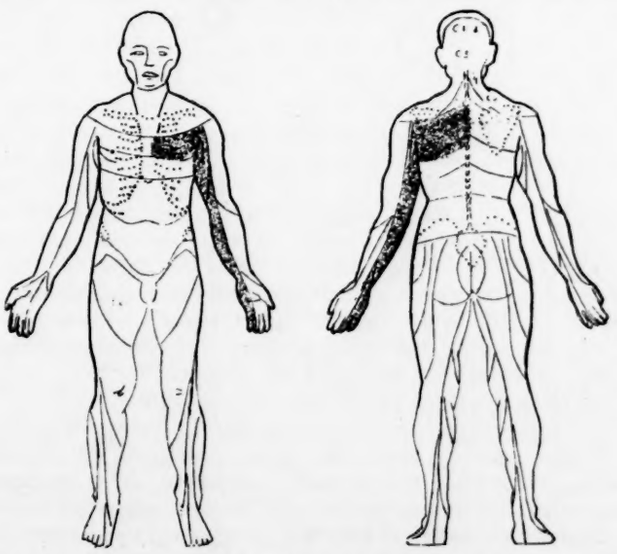

Fig. 3.—The unilateral distribution of subjective sensory disturbances with radiation down the inner side of the left arm. The objective sensory alterations were usually distributed according to the entire bilateral distribution of the same roots.

radicular pain, which was in contrast with the viscerosensory pain in the same region.[10] Commenting on the

8. Mackenzie: Angina Pectoris, p. 34.
9. Pottenger: Symptoms of Visceral Disease, p. 311.

10. Mackenzie pointed out that the pain in the viscerosensory reflex was noted by the patient in the distribution of the spinal roots and then it spread to contiguous spinal root zones without first involving the entire distribution of the root or roots in which the symptoms first appeared. He cited as an example the pain in angina pectoris which appeared in the region of the sternum or left sternal border and then spread over the left side of the chest and thence appeared to radiate into the left arm on the inner side, without first involving the remainder of the distribution of these roots on the right side of the chest, or on the back of the chest on the left side.

latter, Mackenzie [11] noted: "The character of visceral pain thus elicited was that even when violent its situation was not precise. . . . It was regional rather than localized. That is to say, the patient referred pain to a region of the body rather vague in its limitation."

CLINICAL COURSE: MODE OF ONSET, DURATION AND DESCRIPTION OF PAIN

Although radicular pain might appear abruptly, the onset of the pain did not occur with force, as in a seizure, which might be termed an attack. It lasted for a variable length of time, from a few minutes to hours, and might disappear as quickly as it appeared, but more often the cessation of pain was gradual. It usually tapered off. If a comfortable position was found, speedy relief would be obtained.

The pain did not have the crushing or tearing qualities that prevented other activity and did not "pull up" the patient. The response to effort was good even during the pain. A sense of fatal outcome (angor animi), or anything approaching it, was not observed. A certain fear of increasing symptoms sometimes caused the sufferer to slow down or stop a particular activity, but the persistence in effort was not followed by serious consequences. In fact, at times, as in the early morning after the patient got out of bed, relief was obtained after a certain degree of activity was continued. (This was probably due to the increase in the muscle tonus along the spinal column musculature.)

The pain was generally bothersome and nagging. Certain movements of the spinal column or the acts of coughing, sneezing and straining caused it to recur or to become aggravated. Although it was never severe enough to require opiates, in its aggravated forms it prevented work more by virtue of its exacerbations which followed movement of the spine. Ordinarily the patient was aware of a disagreeable sensation. He was uncomfortable, and nothing more. While seated, during the taking of the history, he would tell the examiner that he had pain and would then proceed to outline it and to describe its characteristics. Often, when asked whether he would consult a physician if the disorder was strictly confined to the right side, the patient would reply: "No, I would pay no attention to it then, because the heart is not on that side." During the manipulations of the spine, in the course of the physical examination, certain movements of the spine might reproduce symptoms. Unless the patient called attention to the pain elicited during the manipulation, the examiner would not ordinarily be aware of its presence, for there were no outward signs to disclose the condition.

In the extreme forms, and to a certain variable degree in the ordinary forms, the sufferer had pain either over the precordium or in the other root zones from morning to night, at rest or in sleep. The pain appeared in one region or another [12] when the head was raised from the pillow in the morning and disappeared after the patient had been up and about for a while, only to return when active movements were again begun. Only temporary relief was obtained by resting in a chair, for, on prolonged sitting, radicular pain returned. Later sleep was broken by a return of symptoms which necessitated a change of position for relief. From time to time the site of the predominating symptoms shifted. At one examination the precordium occupied the patient's attention, and at another the small of the back and the front of the abdomen, or the area over the gallbladder and the back across the shoulder blades. Again it was chiefly occipital and vertex headache, or shoulder "neuritis." It was not surprising, therefore, that between the periods of "heart pain" the patient was not entirely well and free from pain. Whether or not the symptoms were in the upper part of the chest over the heart or in the small of the back and the abdomen, the factors which induced and aggravated symptoms, or those which afforded relief, were alike. The painful areas were similar in their symptomatology and they varied only in their regional location and intensity.

The occurrence of pain, often many times in the twenty-four hours, depended on the nature of the patient's activities. The common exciting factors were bending, prolonged sitting, moving the arm as in sweeping, walking and the acts of coughing, sneezing and straining. The latter were not as important in the production of pain in the upper dorsal roots as in other regions. The presence, however, of root pain incited or aggravated by one of these acts is a very helpful sign for the diagnosis of the condition. The duration of the pain did not seem to bear any relation to the frequency of the onset or the disappearance of symptoms.

THE SENSORY OBJECTIVE DISTURBANCES

When correctly tested by means of the cotton tuft on a wooden applicator, sensory disturbances, indicating involvement of the posterior spinal roots, could be demonstrated.[2] Alterations in sensation were chiefly bilaterial and distributed according to spinal root zones, and demarcation of the sensory changes was sharp. These zones could be more easily demonstrated posteriorly than over the front of the chest. Because of the mechanical difficulties of stroking the skin with an even pressure, the inner side of the arm was the least satisfactory area for testing, but repeated examination over a given area demonstrated constant reactions.

The sensory disturbances bore a fairly constant relation to the duration of symptoms. During exacerbations in a given region, when symptoms were of less than a year's duration, hyperesthesia to the cotton tuft was the most constant finding. In the periods between active symptoms, various degrees of a decrease in sensation to light touch were present, as demonstrated with the cotton tuft. Generally, the hypesthesia was demonstrable when the duration of symptoms was longer than five years. Anesthesia to the cotton tuft was rarely demonstrated over the distribution of the upper dorsal roots.

In the present study, hyperalgesia of the skin was tested for by the method of pinching in lieu of the laborious method of testing for light touch alterations with the cotton tuft. A fold of skin in the distribution of the second or third dermatomes was lifted slightly and pinched between the fingers and compared to an area on the same side above in the distribution of the fourth cervical root and with the dorsal root areas below the distribution of the fifth dorsal dermatome. On the

11. Mackenzie: Angina Pectoris, p. 33.

12. The regions complained of, according to frequency were: an area immediately over the sacrum (spoken of by the patient as backache) with radiation down the back of the thigh to the outer side of the leg and dorsum of the foot; or localized pain over the sacrum concomitant with pain over the inner side of the legs; an area "up and down the back of the neck"; an area over the side of the neck and shoulders (when the area "up and down the back of the neck" and the area over the side of the neck and shoulders were affected together, radiation occurred over the outer side of the arms and forearms): an area over the occiput (described by the patient as "headache") with radiation to the "top" of the head; an area over the upper part of the abdomen, hypochondrium and epigastrium, with radiation to the back and the shoulder blades, or beginning posteriorly and radiating forward; an area over the lower part of the abdomen with radiation to the "small of the back" (spoken of, by the patient, as backache), or beginning posteriorly and radiating forward; an area across the upper part of the chest (on the left side this area will be spoken of as the precordium), with radiation around to the back and across the upper part of the back of the chest or to the armpit, down the inner side of the arm, or forearm to the little finger.

arms the inner and outer sides were pinched in a similar manner. Hyperalgesia (or hypesthesia) of the skin was also readily demonstrated in the area of subjective disturbances of the chief complaint. Most interesting in these demonstrations was the presence of sensory disturbances in the entire bilateral distribution of the involved roots, including the inner side of the right arm, where the subjective complaints were infrequent. Bilateral objective sensory disturbances were the most common observations.

Localized tender spots in the skin and painful points along the course of the intercostal nerves were not noticed.

MEANS OF DIFFERENTIAL DIAGNOSIS

The differential diagnosis of precordial pain of radicular origin from that of visceral origin is largely made on the basis of a careful history.

On physical examination, evidences of hypertrophic osteoarthritic processes in the peripheral joints, as shown by Heberden's nodes, or grating or crackling in the knee joints, shoulder joints or in the neck, may be present, but these are not invariably noted. The spine generally shows restricted mobility. The normal dorsal anterior bowing may become exaggerated or flattened out in its upper or lower part. Sensory alterations to light touch and to pinching, distributed according to spinal root zones, can be demonstrated as previously described.

The roentgen and fluoroscopic examinations of the heart and the electrocardiogram objectively assist in diagnosing the presence or absence of organic heart disease, and the roentgen examination of the spine reveals the presence of hypertrophic osteoarthritis in one or both of the vertebrae forming the formaina of exit of the involved dorsal roots.[13]

TREATMENT

The effect of therapeutic measures likewise helps to differentiate organic heart pain and radicular pain. Salicylic acid or phenobarbital usually relieved symptoms of root origin. Codeine was sometimes necesary. The usual symptomatic treatment with coal tar derivatives and other analgesics, however, helped only temporarily.

Physical therapeutic measures, such as baking, heat and massage and immobilization in a high back corset or a Taylor brace, afforded relief. Heat was found to be the most satisfactory agent for the milder cases.

Nitrites were without effect on the pain, and caused considerable discomfort by the dizziness and the sensation of lightness which followed their ingestion. Nitrites have proved very valuable as a therapeutic test in the separation of the precordial pain found in the viscerosensory reflex of cardiac origin from that of nerve root origin. The relief of the former condition by nitrites is well known (excluding the severe manifestations of coronary thrombosis). In our experience vasodilators were without effect on the pain of nerve root origin.

In seventy cases we have encountered only three borderline cases in which the signs and symptoms have failed to indicate clearly the underlying pathologic process. Confirmatory evidence has been sought in all cases, as has been outlined. Other helps are found in the relief of symptoms obtained by physical therapeutic measures, such as light massage and heat, and mechanical appliances, as braces and corsets, or strapping of the chest. Mild analgesic drugs such as salicylates and phenobarbital gave definite though temporary relief. Nitrites were without any effect on the pain.

SUMMARY AND CONCLUSIONS

The precordial pain of nerve root origin, which is commonly associated with hypertrophic osteoarthritis of the spine, occurs so frequently that it is worthy of attention. It is distinguished by its close relation to motion of the spine, such as occurs in bending, raising the head on awakening, getting out of bed, walking, sitting in one place any length of time, and lifting. Conversely, relief is obtained by the removal of the aggravating mechanical factors and by the use of mechanical appliances, such as corsets and braces, and of a nonresistant surface for sleeping, such as is obtained by placing boards under the mattress. The precordial pain of nerve root origin is delineated in broad beltlike zones along well defined spinal root dermatomes. It is constantly present in the back of the chest as well as over the precordium. Associated sensory changes can be demonstrated which are bilateral and distributed according to spinal root zones both in front and in back, and correspond usually to the entire distribution of the roots in the area of subjective sensory disturbances. Nerve root pain does not respond to vasodilators such as nitrites. The response of this group to effort is good, and the associated phenomena of cardiovascular disease do not dominate the picture.

The measures here outlined generally suffice to differentiate nerve root pain from the sensory reflex pain of angina pectoris.

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13. Symptomatically, as well as pathologically, hypertrophic osteoarthritis of the spine is usually a diffuse process, but the intensity of symptoms does not parellel the degree of anatomic changes shown by the roentgen examination. It is evident that these symptoms depend not only on the mechanical factors mentioned but on others which at present are not so clear. As causes of root irritation or compression may be mentioned early soft tissue changes (Nathan, P. W.: The Neurological Condition Associated with Polyarthritis and Spondylitis, Am. J. M. Sc. **152**: 667 [Nov.] 1916. Putti, I. V.: New Conceptions in the Pathogenesis of Sciatic Pain, Lancet **2**: 53 [July 9] 1927. Bize, M. P.-R.: Les Algies du trou de conjugaison, Gaz. d. hôp. **101**: 945 [June] 1928) and later fibrosis or bony overgrowths (Sachs, B., and Fraenkel, J.: Progressive Ankylotic Rigidity of the Spine: spondylose rhizomelique, J. Nerv. & Ment. Dis. **27**: 1, 1900. Bailey, P., and Casamajor, L.: Osteo-Arthritis of the Spine as a Cause of Compression of the Spinal Cord and Its Roots, J. Nerv. & Ment. Dis. **38**: 558, 1911. Parker, H. L., and Adson, A. W.: Compression of the Spinal Cord and Its Roots by Hypertrophic Osteo-Arthritis: Diagnosis and Treatment, Surg. Gynec. Obst. **41**: 1 [July] 1925).

Glittering Hypotheses Stated as Facts.—The clean-up job resulting from the psychoanalytic movement falls to the psychologist, whether he wants it or not. I speak not alone of the rehabilitation of patients psychoanalyzed until their funds are exhausted or until their symptoms become too serious to play with. I speak of still graver results of the popularization of psychoanalytic speculation. Although the progress of psychoanalysis has been marked by the development of glittering hypotheses, stated as facts, the abandonment of these, and the substitution of still others, the course of psychoanalysis cannot be treated simply as the zigzag path of an inebriate, marked by a series of empty flasks. The hypotheses, abandoned or not, filter down to popular level, and their origin, frequently unrecognized, produce results which are sometimes appalling. Although the main psychoanalytic movement has burst, one of its accessory bags is still inflated, and curiously enough has fascinated a few laboratory men who ought to know better. For at least three thousand years there has been the illusion that if we could only classify men, great social problems would thereby be solved. And so the sheep and the goats have been classified under various more pedantic headings and subheadings. Now the terms are introvert and extravert, and we have even laboratory methods being devised to sort out the woolly animals from the hairy ones. A survey of this little inebriation episode in the case of the laboratory is most diverting, but not timely here.—Dunlap, Knight: *Science*, Feb. 22, 1929.

Clinical Notes, Suggestions and New Instruments

THE REMOVAL OF BROKEN SPINAL ANESTHESIA NEEDLES

FRANK H. LAHEY, M.D., BOSTON

Spinal anesthesia for the better, I believe, in proper hands, and decidedly for the worse, if not, is being employed with greater and greater frequency with the probability that more and more needles will be broken off in the spine and require removal. Having had occasion to remove segments of broken spinal anesthesia needles from three patients, in one of whom the needle was broken off in the spine in our own clinic, and in two elsewhere, I thought it possible that a description of the plan which was pursued might be of value to others.

No doubt many others have employed similar measures, but the procedure has been so helpful to us that it is illustrated and described in the hope that it may aid others in a most annoying and distressing situation. I know of no catastrophe which, while perhaps not alarming, is more disturbing to contemplate than that of a needle broken in the spinal canal.

We had assumed that the employment of a 22 gage rust-proof needle of such flexibility that it could be wound around a lead pencil without breaking was sufficient protection against the possibility of breakage. That such is not the case, however, is evidenced by the fact that recently just such a 22 gage flexible rust-proof needle did break in the canal after the spinal injection had been made. The other segments of needles were removed from two patients before the recent developments of spinal anesthesia and before the employment of small gage and rust-proof flexible needles. It is therefore evident to me that this situation is at least always a possible one to be dealt with.

If the spinal anesthesia has already been induced above the level of the needle puncture before the accident has occurred, no further anesthesia will be necessary. If not, then a general or another spinal anesthesia must be induced. The point of puncture in the skin marking the point of entrance of the broken needle should first be marked by a small transverse skin cut, in order that it may not be lost and thus uncertainty arise as to the interspace within which the broken segment rests. Next, a generous longitudinal incision is made directly over the spinous processes. The aponeurosis over the erector spinae on each side of the spine is incised for the full distance of the skin incision, the muscles on each side of the spinous processes being separated well down and a little outward on the laminae of the vertebrae (figs. 2 and 3) and held outward with retractors. With this exposure the index finger may be gently carried down to the laminae in each side of the spines over the interspace in which the needle rests, and its broken end palpated, grasped with a right-angled hemostat and withdrawn, unless the end rests directly between and beneath the spinous processes (fig. 4*b*). Should this be the case, with the erector spinae muscles on each side well retracted, the points of a right-angle hemostat with the jaws opened are passed between the spines and the interspinous tissue is gently grasped and upward traction made on it until the needle is found.

In the three cases, the ends of two needles have been found in the lateral position and one needle was found in the interspinous position.

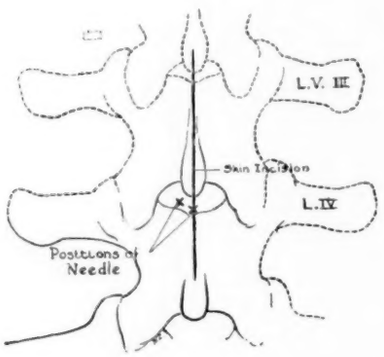

Fig. 1.—Two positions relative to the median line in which broken needles may be found.

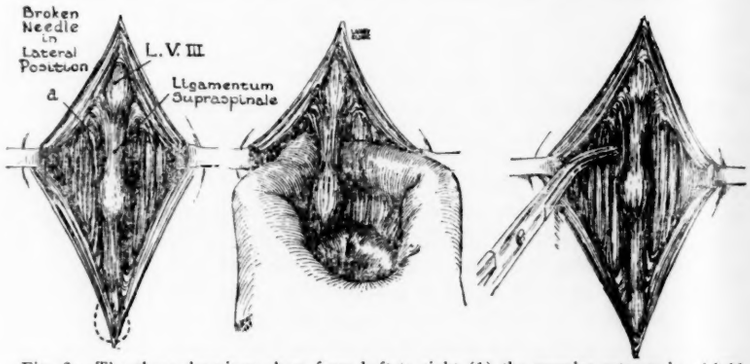

Fig. 2.—The three drawings show from left to right (1) the muscles retracted and held back from the spines, showing the end of the broken needle in the lateral position; (2) the method of palpating for the needle with the thumb and forefinger on either side of the spinous processes in the groove between the spines and laminae, and (3) the removal of the broken needle by grasping it with a right angle hemostat.

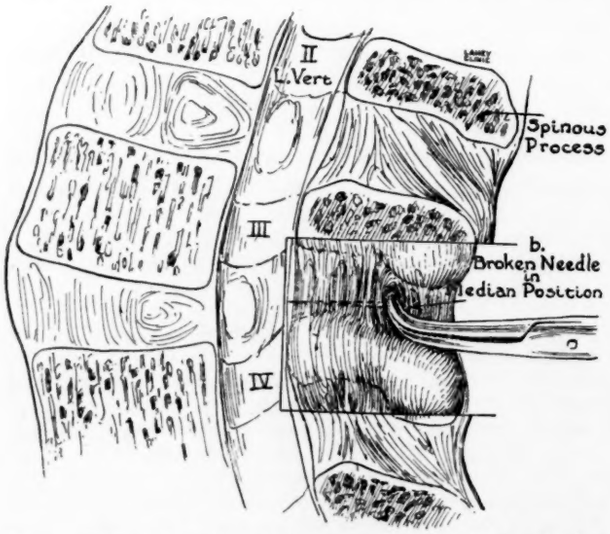

Fig. 3.—Method of grasping the broken needle with a right angle clamp when in the median position between the spines.

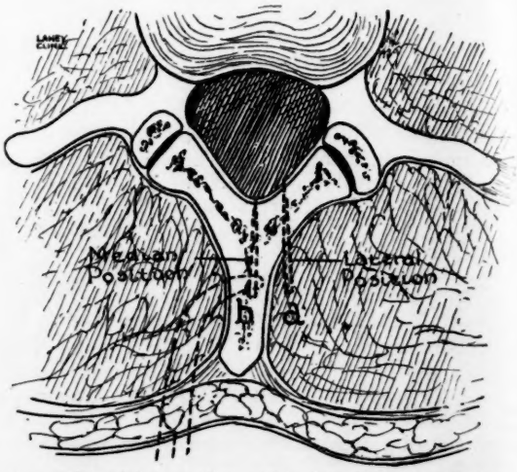

Fig. 4.—*a*, the relative position of the laterally placed broken needle seen from the imaginary superior plane; *b*, method of grasping the broken needles in the median position with a small right angled clamp between the spinous processes from the same imaginary superior plane.

I realize that the removal of but three needles is a limited experience with this procedure. It is hoped that our experience will not become any more extensive. This plan is presented solely as a possible helpful suggestion from our own experience to some one who perhaps has not as yet had to ponder over such an unhappy situation.

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A NEW METHOD FOR SUTURING WOUNDS*

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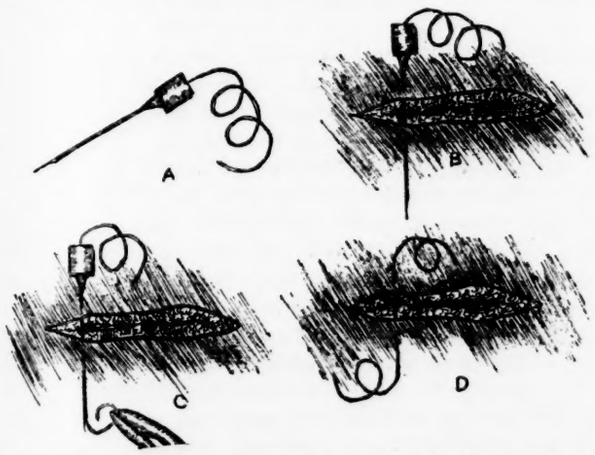
For closing wounds, especially the smaller ones and those in which it is possible to place the suture properly with a straight needle, the procedure described in the following paragraphs has been found to be much less painful than is the use of the conventional suture needle.

A hypodermic needle, long enough to extend through the two margins of the wound at the same time and having a long bevel, is loaded with either horsehair or silkworm-gut (*A*, in the accompanying illustration) and inserted through the margins of the wound in the position in which the suture is to be placed (*B*); after the needle has been inserted through both margins of the wound, the suture material is pushed out through the level point of the needle and held either by forceps or by fingers while the needle is withdrawn (*C*). The suture is then in the same position in which it would be had it been placed in the usual manner (*D*) and is tied carefully so as to avoid pain.



A, Needle loaded with suture material; *B*, needle inserted through margins of wound; *C*, suture material pushed through bevel point of needle and held by forceps ready for withdrawal of needle, and *D*, suture material in place ready to be tied.

A 20 gage needle handles the smaller sizes of silkworm and a 19 gage the medium size silkworm, while a 23 or 24 gage needle will usually carry the horsehair.

ADVANTAGES OF THE PROCEDURE

This procedure is of particular advantage in cases of accidental wounds in which it is not advisable to give a light general anesthetic because the patient has just taken food, or a local anesthetic because of the possibility of additional trauma and of diffusing infection through the sound tissues. The pain in closing this type of wound by the usual method occurs chiefly at two points of the procedure: (1) when the loaded eye of the needle follows the needle into and through the tissues, and (2) when the suture is tied. Furthermore, to draw the conventional type of suture needle through the tissues often requires a considerable amount of pull on the wound margins and sometimes distorts the sutures already placed.

The method described eliminates this additional strain on the tissues and can be used with no more pain than is caused by giving an ordinary hypodermic injection.

A curved needle, with a wing on the butt for holding the needle, is now being made for suturing wounds in this manner.

2001 Fourth Street.

* From the Rees-Stealy Clinic.

Special Article

BASIC SCIENCE STATUTES

HARRY EUGENE KELLY

CHICAGO

The cults, notwithstanding the weakness of their theories, have been making steady progress with legislative assemblies throughout the country, and undeniably have obtained from them favorable recognition by law. In some states they have won all that they have sought, including their own administrative boards, entirely independent of the higher general professional standards maintained by the state and of the administrative agencies for enforcing them. In other states they have won substantial recognition without separate boards. But it is undeniable that throughout the country as a whole they have made noteworthy progress during the past thirty years in establishing for themselves a very considerable legal status, and that they have seriously retarded and impaired the establishment and maintenance of the single standard of professional qualification for all physicians alike.

Those of us who have been engaged from time to time in presenting arguments to legislative assemblies respecting the basis for the regulation by law of the occupation of healing the sick, and therein have been supporting the establishment, or maintenance, of the single standard of qualification for all physicians alike, regardless of the disagreements among devotees of the so-called schools and systems of healing, have been forced to the conclusion that the cults, by various means, most of them disreputable, have induced a large part of the public and many of the legislatures to give them friendly and substantial recognition to the perceptible detriment of the public health.

It does not matter that such recognition is illogical, detrimental to the public health, obstructive of the maintenance of proper professional training and standards of scholarship, and founded generally, in the last analysis, on the inclination of legislators to yield to persistency rather than to reason.

CORRECTIVE LEGISLATION

The fact that the claims of the cults are in truth without merit, but nevertheless are recognized by law, moves us to seek a method, indirect though it must be, of protecting the public health against the low standards of professional training advocated and established by them. From time to time during the existence of the cults, various suggestions have been made to this end. One of the oldest is that of providing by law that knowledge of only a few fundamental sciences shall be required legally to authorize a physician to heal the sick, without regard to the *method* of his treatment of diseases, and that knowledge of therapeutic agencies of every kind shall be disregarded in conducting the official examinations.

"BASIC SCIENCE" STATUTES

This plan has recently been developed into the existing so-called basic science statutes. There are some new features about these statutes; but the basic idea of eliminating from the official examinations the contro-

versial subjects is not new. In 1881 Colorado passed an act for licensing physicians, in which it recognized certain sciences as basic in the education of physicians, and specifically eliminated materia medica and therapeutics from the required examinations. This Colorado act excluded these controversial subjects in order to avoid the evils of special legislation for various cults. The act did not recognize any cult, as the basic science statutes do either impliedly or specifically. It was continued in force for twenty-five years, when, in 1905, its successor reenacted essentially the same plan, but not without mentioning osteopathy, and continued for another decade, when the cults achieved more particular recognition in subsequent legislation.

Under the old Colorado statute examinations were conducted in every necessary science except materia medica and therapeutics, the two subjects over which the controversies have arisen. This was a logical solution of the difficulty. If it had also provided for the appointment of examiners not in any way connected with the practice of the healing arts, it would have been a truly basic science law and might have survived. But it was finally discarded because the examiners in control were appointed from the regular physicians, who were charged with not being willing to give the representatives of the cults an impartial examination in the various subjects. The charge, of course, was untrue. Nevertheless its constant reiteration brought about the destruction of the single standard erected by the statute and substituted specific recognition of the cults.

Serious attention may well be given to the adroit method that has been embodied in the modern basic science statute. It proceeds on the assumption that cults exist, and have substantial legal recognition in separate boards, within the jurisdiction, and that all of the statutes establishing methods for licensing physicians of every kind should be amended by another statute requiring of physicians of all cults accurate knowledge of certain sciences deemed basic in the opinion of members of all of the cults. Whether resort to such a basic statute will prove to be merely an overwhelming victory for the cults, and a destructive defeat for the advocates of the highest professional training, or whether resort to such a statute will prove to be instrumental in creating higher standards of professional training for all of the cults, depends chiefly on the nature of the statute, as to the number and character of the scientific subjects declared therein to be basic, the examiners to be placed in charge, the effect of the certificates of proficiency granted in such sciences, and whether these examinations and the certificates of proficiency are to be based on a high standard of scholarship without modification to suit any so-called school or system of healing.

THEORY OF THE BASIC SCIENCE STATUTE

The theory of the basic science statute, as I conceive it, may be briefly stated.

1. The examiners must be persons scholastically qualified in a high degree to conduct the examinations, and must *not* be engaged in the practice of the healing arts. This provision, if systematically administered, would in theory give the highest efficiency in determining the knowledge of the applicant in the various subjects in which the examination is conducted, because the examiners would not only be intellectually qualified but would presumably be able to conduct examinations without being influenced by the alleged prejudice against the claims made for some methods of healing. Under such a system of examination the devotees of the various cults would be deprived of their stock argument that the examiners are prejudiced against them, and, therefore, do not treat them fairly, with the expected result that they would apply for, and enter, the examinations with a feeling of security that they would be tested alone on their actual merits.

2. The emphasis would be put on demonstration of qualifications by examination and not on study in a college, so that the devotee of the cult would be given security that his actual learning and intellectual power, and not his educational pedigree, would determine his rating as an applicant for a license to practice the healing arts, and he would be freed from the alleged thraldom of mere arbitrary curriculums in the control of persons unfriendly to him or his cult.

3. The applicant for the examination, if he passes it, receives a certificate which entitles him to credit for possessing enough knowledge to prevent him from being dangerous to the public health, and entitles him to a license to practice the healing arts, if he shall submit himself to and pass the special examination by such particular examiners as have the right under the law to issue licenses to practice generally or in one of the cults. This provision does not, and is not supposed to, put all applicants for licenses of every kind on a parity as to attainments, regardless of "schools" or "systems of healing," or even to bring about as to these basic sciences a single standard of intellectual qualification. The nonsectarian examiners, and the cult examiners, may impose other examinations, or additional conditions, according to the other statutes under which they act, before admitting the applicant to practice. The basic science statute merely establishes a minimum standard of scientific scholarship to which all applicants for licenses must submit.

4. By this method each cult, while submitting to the strictures of this minimum standard, preserves its right to exist, and to issue its propaganda about its alleged usefulness, and to continue its schools, so that those who are interested, from whatever motive, in keeping the cults going are not antagonized by the basic science statute in their efforts in that respect. Without a certificate of proficiency in the basic sciences a person *is not permitted* to secure a license of any kind, and with such a certificate he *may not* secure a license of any kind, so far as the basic science statute is concerned, for he still must pass the nonsectarian or cult examiners on the basis of their own requirements.

EMPHASIS ON EXAMINATION

In analyzing the provisions of the basic science statutes that have already been adopted, I am impressed by the controlling emphasis which these statutes place on the *examination*, as the superior and final test of the accuracy and sufficiency of the knowledge possessed by the applicant for a license to practice the healing arts. All of these statutes apparently exclude any emphasis on the training that an applicant has had in any college. In my view there is no method of training that ought to be acceptable except that which is from time to time supplied in good medical schools. It is deemed possible for an applicant, sometimes by accident, sometimes by a system of cramming, to pass an examination, and apparently show a sufficiency of knowledge, without

having had the training in the subject that under modern conditions is deemed requisite to protect the public health, and that should reasonably be demanded under modern conditions by the state. It is a mistake to put the emphasis on proof of qualification by examination. The emphasis ought to be put on proof of actual training, instruction and accomplishment in the laboratory, lecture room and clinic. The framers of the basic science statutes, in placing the emphasis on examinations, have simply yielded to the insistence of the cults on their right to conduct low grade schools of instruction and to compel the recognition of them as sufficient for qualifying physicians for the practice of healing. They have found it impossible to recognize such schools and have therefore adopted the examination as proof of qualification. The surrender to the cults in the abandonment of proof of many years' intensive training, instruction and accomplishment in high grade schools of instruction, and the substitution therefor of an examination of a few hours' duration, is retrogression that ought not to be embodied in the law.

OBJECT OF BASIC SCIENCE PLAN

It is apparent, from an examination of the theory of the basic science plan, that its object is to supply an antidote for multiple boards of examiners. It *pretends* that there are fundamental sciences which are used by all the cults, that all the cults seek proficiency in those sciences, that the public good requires at least a certain minimum of proficiency therein, and that all the cults are willing to submit themselves to disinterested scholarly examiners known to have no prejudice and no ulterior object in view. These pretensions are not well founded in fact. There are many cults that do not make such admissions. Persons who originate cults, or keep them alive, are not actuated by any such motives.

But it may nevertheless be advisable to enact a basic science statute in a state maintaining multiple boards, in order to force the application of reasonable standards of scholarship on cult practitioners—and, of course, that is really the object—for the protection of the public health, but I feel impelled to warn you that we should not expect it to eradicate the worst of the evils of cults. Most of the difficulties that confront us in regulating the practice of the healing arts, on a basis of reasonable educational qualifications, inhere in the ignorance, selfishness and cupidity of certain classes of persons who have no respect for law as a rule of justice but seek to make it conform to their selfish desires and needs, regardless of the exigencies of the public health. The passage of a basic science statute on the assumption that thereafter these persons can be permanently committed to its actual observance, or even to its theoretical acceptance, is to a large extent an attempt to deal fairly with persons on the basis of their really believing that they have substantial grievances, and honest intentions, in the promotion of the public health, whereas they have only the selfish object of setting themselves up in a profitable business with the least possible expense and trouble without regard to the public welfare.

SEEKERS OF SPECIAL PRIVILEGE

No matter what the requirements of law are, or how easily attainable any standard of proficiency required for admission to the enjoyment of its benefits, there are persons seeking its privileges who are not willing or able to qualify to receive them; but such persons desire, nevertheless, to have all the privileges and benefits of the law to which they do not conform. However meager may be the qualifications required for admission to the enjoyment of the privilege of practicing the occupation of healing the sick, there are always those seeking the right to follow that occupation who are not willing or able to meet the legal requirements but who, notwithstanding their want of qualification, seek the enjoyment of the benefits conferred by the law on legally authorized practitioners and contrive by one kind of means or another to hold themselves out to the public as doctors.

POINTS OF ATTACK IN BASIC SCIENCE LAWS

One does not have to frequent legislative halls long to ascertain that no proposition is admitted by everybody to be basic. Substantially every embodiment of legislation is constantly attacked by somebody. Some minds are utterly lawless and unconforming by nature; and others act only on selfish grounds in refusing to accept propositions regarded as fundamental by most of mankind. These rebellious minds make most of the trouble in efforts to agree on a basic proposition for legislation.

It is not enough to assert, even by legislative enactment, that all practice, both nonsectarian and cult, is based on fundamental sciences, because some cults maintain, and will continue to maintain after the passage of any basic science statute, that the dogmas of their particular cult may be administered without knowledge of the sciences called basic.

DENIAL OF ESSENTIALS

For instance, the chiropractor not only denies that diagnosis is necessary but denies that any one of the so-called basic sciences is necessary, and asserts that his peculiar manipulation of the spinal column is pertinent to the conditions created by every disease and that, therefore, there is no need of knowing anything about the disease with which any patient is afflicted. The passage of a basic science statute will not change the mind of a chiropractor and he will continue to conduct his practice in violation of the basic science law, as he has done in violation of all the other laws; and he will continue to haunt legislative halls to procure amendments to all the statutes, whatever you may call them, and whatever may be their propriety, allowing him to go along in his practice with the kind of information that he happens to have.

OBJECTORS TO ANY RESTRICTIONS

In other words, there will be the same assault on the basic science law by quacks that has heretofore been made on every other law that has for its object the maintenance of definite standards. The question will always be with us: What sciences are basic? The contention will always be with us that most of them are not. If it were now possible to secure unanimity among all the practitioners of healing on the proposition that certain sciences are basic, this unanimity would not last long, because somebody, not having the ability to make himself proficient in the sciences declared to be basic, would come forward and urge that the maintenance of such standards is oppressive to him and his patients; that he ought to have the right to conduct his own practice in his own way, so long as his patient is satisfied,

and that there should be no interference between him and his patient by the state: a proposition that is denounced by everybody who knows anything about the maintenance of public health but which will always find acceptance by somebody having the authority to participate in legislative enactments.

SELECTION OF EXAMINERS

The examiners are probably the most important element in the scheme embodied in the basic science statute. Cults, and the teachers in their schools, have from the beginning charged that the examiners of the nonsectarian boards have dealt unfairly with their applicants and purposely prevented them from passing their examinations. There is no foundation for any such charge. Their applicants manifestly to a large extent have not had the educational qualifications necessary to enable them to pass reasonable examinations. Nevertheless, since the examiners are chiefly doctors of medicine from the more famous medical schools, many legislators have been induced to harbor doubts as to their disinterestedness. Hence we see this wise attempt by the formulators of the basic science statutes to get examiners manifestly destined to be impartial in the absurd controversies that have been developed.

Minnesota provides that two of the examiners shall be full-time paid professors appointed by or under the authority of the University of Minnesota, and that another shall be a doctor of medicine and surgery, another a doctor of osteopathy, and another a doctor of chiropractic. This classification of examiners simply establishes the composite board that we have known for a long time, with all its defects, and particularly with its express recognition of a legal status for cults, and carries into the basic science law the worst of the evils for the eradication of which the basic science statute has been proposed.

Nebraska provides that no examiner shall be a person licensed to practice the healing arts or any branch thereof. While this provision may obviate every basis for the charge of prejudice, it removes the whole examining system from the administration of the persons who know most about the doctor's need for, and his application of, the knowledge of the various basic sciences. This type of examiners certainly removes the practical professional touch from the examinations, and substitutes the mere scholasticism of pure science. The effect of such a revolution in physicians' examinations cannot be definitely foretold but may be imagined.

Washington provides for the appointment of five persons, learned in the particular basic sciences, from the faculty of the University of Washington and the Washington State College, and probably has made the best provision for establishing the examination on a purely scientific basis, separate and apart from any dogma.

SUBJECTS NAMED AS "BASIC SCIENCES"

The Wisconsin law names anatomy, physiology, pathology and diagnosis as basic sciences. The Minnesota statute names these and adds bacteriology, hygiene and chemistry. The Nebraska law follows Minnesota. Washington follows Nebraska's list, but excepts bacteriology. The action of these four states in determining what subjects are fundamental indicates the difficulty, if not the impossibility, of agreeing on the first requisite of the basic science statute. But that is only one difficulty in a bad situation. It is apparent that not one of these states has listed all the subjects that are really basic in the preparation of the student for the work of the physician. None of these states include obstetrics, which will hardly be denied a place among the basic subjects. None include even the most elementary phases of surgery, such as setting a bone or doing any one of a score of things necessary to be done by every physician in general practice from day to day. Nor does any one of the states include poisons or their antidotes, or contagious diseases, unless they are meant to be corralled under hygiene or chemistry, or another of the subjects susceptible of extension indefinitely to include everything.

The Nebraska law provides for separate licenses for persons practicing medicine and surgery, persons practicing osteopathy, and persons practicing chiropractic, a scheme which not only tolerates but legislatively creates cults, and not only tolerates and creates them but provides for unequal professional training among them.

Nor does Washington do any better, since it provides that the examiner shall conduct "examinations of all persons applying for licenses or certificates for practicing medicine and surgery, osteopathy, osteopathy and surgery, chiropractic or drugless therapeutics," thus not only recognizing cults but establishing a legal classification of them that is probably the worst that has ever been contrived.

It is my view that the basic science statutes thus far passed are not yet strongly indicative of sure tendencies in the direction of better conditions for conserving the public health.

CULTS AND COMMERCIAL SUCCESS

If a basic science statute requires that a cult physician have sufficient knowledge of certain sciences to safeguard the public from the dangers of allowing uneducated physicians to practice—a supposition that we have to make in order to give a material reason for passing the basic science statute—we may ask why any other examination should be required by examiners representing a particular cult. For illustration, in the case of an applicant, under the basic science statute, who seeks admission to the chiropractic cult, any additional requirement by the examiners of that cult would not be material in the interest of the public health; so, therefore, might we not omit it, so far as any requirement of law is concerned?

The necessary answer is interesting to contemplate. The additional appearance before the chiropractic examiners is insisted on by the proprietors of the chiropractic schools in order to keep the cult going and the students coming. I dare say that, if there was no profit in conducting the schools of the cults, the cults would languish and die, all appeals for legislation in their behalf would cease, and a single standard of intellectual proficiency would be unopposed. In other words, the strength of a cult is not in any new idea possessed by its originators or devotees but in the commercial success of the schools that make money out of it.

IMPORTANCE OF HOLDING TO FUNDAMENTAL PRINCIPLES

I admit that the condition created in a state by multiple boards is intolerable and that every method that will ameliorate it ought to be carefully studied and, if possible, adopted. But when a new method of accomplishing this thing is suggested, it is important to consider carefully whether the new method will actually produce an improved condition or whether, in the long run, it will simply fasten the vices of the cults on us more firmly and more definitely. It is not wise to abandon fundamental principles for what seems an immediate improvement if the improvement can be but temporary and if, in the long run, the expedient adopted will but weaken the public demand for the best service by the most carefully educated physicians. Rather than accept the examination, for instance, as the only test of training and instruction, or accept only a few of the necessary sciences as basic, with the consequent abandonment of proof of knowledge in many other subjects that are of the highest importance in considerations of public health, is it not far better for the educated physicians of the country, instead of compromising eternal principles of justice and efficiency, to stand by those principles and, if necessary, go down in defeat in warfare with the quack, and stay in defeat until the people wake up to the true conditions that confront them, and finally, as they always will, come to the acceptance of the principle that is fundamental and that will supply the relief that evil conditions demand? I think so.

While I am willing to make the experiment of promoting basic science statutes in those states that have multiple boards, I am not willing to consent to a basic science statute that ignores the fundamental principles for supplying educated physicians to the country, or that yields our insistence on their importance merely to avoid a controversy with the cults. The penalty of such a compromise with the cults is too great to be willingly borne. It seems to me that thus far the best of the basic science statutes is merely a feeble step in the direction of forcing the cults to require some more or less inconsequential additional knowledge in a few subjects with the possible effect of deluding the public into the thought that, having passed the basic science examination, the physicians produced by the cults are as good as any other physicians because they bear the stamp of legal approval. Is this not complete capitulation to the cults on basic principles that ought not to be surrendered? In passing such a basic statute are we not paying too high a price for the appearance of having made somewhat better physicians out of persons who have no right to the physician's status in the law or in the judgment of the community? These questions indicate to me the line of thought that ought to be directed toward the present movement for basic science statutes as a scheme for ameliorating the vast evils of the present wrongful recognition of the cults by law.

SINGLE STANDARD OF PROFESSIONAL TRAINING FOR ALL HEALERS

All of the present statutory incongruities and evils in licensing physicians could be avoided by the simple legal requirement that all healers be educated under the same standards of proficiency, and that there should be *no special privilege* given to the followers of any cult to practice healing on exemptions from this single standard of reasonable professional training. Under such a system there would be no cults, because the selfish reason for them would be gone, and all physicians holding themselves out to the public would place the emphasis on diagnosis, and out of the world's category of therapeutic agents would cause to be applied to each particular disease that curative agent possessing the best remedial possibilities. This happy condition the people are entitled to reclaim by the enactment of statutes in conformity with the facts of life and the principles of reason.

REAL OBJECT OF THE UNQUALIFIED

Long observation has convinced me that the principal obstacle to adoption of wholesome laws requiring all practitioners of healing the sick to be equally qualified before engaging in their occupation is the fact that throughout the country thousands of persons are following this profession without suitable preparation for it, some of them in conformity with existing statutes, but most of them in contravention of them. Not having made any reasonable effort to qualify themselves, they know that they could not continue to receive emoluments from their practice and make their living out of it if they were compelled to show possession of even elementary qualifications. Hence they oppose a uniform legal standard of reasonable educational requirements for all doctors.

Such persons could receive no credence from the people or from legislators if they should disclose the ignoble reason for their opposition to wholesome laws, because both the people and their legislators naturally favor the restriction of the practice of healing to persons properly qualified to perform that service. Therefore, these unprepared healers conspire to conceal the real questions from the people, to set up false issues, and to lead legislators away from fundamental principles to invented scandal, fraudulent misrepresentation and false theories of both law and medicine.

Following the legislative program of making the worse appear the better reason, concealing the fact that their opposition to wholesome legislation is in reality based on their own deficiencies, they strive to appear to be honestly placing their opposition on worthy grounds. They pretend to be devoted to the public welfare, to justice and to progressive development of science.

These pretensions are made to conceal the real object, which is to maintain inferior legal standards of educational requirements as a special privilege to persons not willing or able to comply with reasonable standards, or to proprietors of inferior schools bidding for unprepared students, unequipped to teach the subjects of a proper course in healing the sick or to compete with good schools in giving the same courses of study.

The untutored healers succeeding financially in passing themselves off to the people are numerous. All of them are opponents of reasonable educational standards. Their own numbers are augmented by numerous persons who for one reason or another champion their alleged cause, deluded patients, dealers in proprietary medicines and their beneficiaries, opponents of vaccina-

tion, of vivisection and of inoculation, fakers, quacks, founders of new kinds of propaganda and organizers of new cults. They fight together to retain their profitable ventures, feeling that they have a common cause.

OPPOSITION FROM MERCENARY SELF-SEEKERS

The most active opponents are the proprietors of the low grade cult schools which assume to make doctors out of ignorant persons in a few months. These schools are bonanzas. They gather in armies of students who pay high tuition fees. They turn out armies of graduates for whom places to ply their frauds profitably must be provided in order to keep new students coming. A reasonable standard of educational requirements would kill these geese that lay golden eggs. Their only attraction is the speed with which they convert ignoramuses into doctors without bothering them about studying diseases or the methods of curing them. These schools can stay alive only under laws that make it possible for their graduates to hold themselves out to heal the sick without having even elementary scientific knowledge of the human body. The proprietors of such schools, therefore, are the more strenuous opponents of a reasonable single legal standard of educational qualifications for all persons holding themselves out as engaged in healing diseases.

Joined together firmly in an organization for promoting their selfish purposes, exaggerating their voting strength and proclaiming their disposition to use it, misrepresenting their educational qualifications and their ability to heal the sick, and deriding educated physicians by venomous and prejudicial scandal, all of these opponents, unmolested by organized opposition from any source, persistently and continuously use every known influence to defeat proposed legislation for erecting reasonable standards of professional training. As long as they are unopposed, or weakly opposed, they will succeed; when properly opposed, their selfishness and weakness will be made known and in the long run they will fail.

NEED FOR ORGANIZATION IN THE MEDICAL PROFESSION

Those who have the public health in view and want to succeed in this contest will have to make a more vigorous fight. They must organize to educate the people and to inform legislators. They must spend their time and money more freely in presenting the public's cause to the legislatures of the country, and, indeed, to the courts, too, which also require ample arguments on the cases before them. The persistent, the vigilant, the crusading men win. It is unfortunate that truth has to be thus enforced, and that it is not self-evident. But error propagated by money, enthusiasm and a not too scrupulous regard for facts often—in some fields generally—overcomes truth, which thus crushed to earth only after a long period of time will rise again. Those who would give the public better laws, if they would succeed, must not be content with merely stating their case scholastically; they must organize to propagate it and then enforce it and compel attention to it by the practical methods everywhere influential with men, not only today but tomorrow and year after year, until the truth is permanently embodied in the law as the settled policy of the state.

111 West Monroe Street.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

EPHEDRINE-LILLY (See New and Nonofficial Remedies, 1929, p. 166).

The following dosage form has been accepted:

Inhalant Ephedrine (Plain)-Lilly: A solution containing ephedrine-Lilly, 1 Gm.; cottonseed oil, 1 Gm.; perfumed with cinnamic aldehyde, benzaldehyde, and jasmine extract, and tinted with butter yellow; liquid petrolatum to make 100 cc. U. S. patent applied for. No U. S. trademark.

EPHEDRINE HYDROCHLORIDE-LILLY (See New and Nonofficial Remedies, 1929, p. 168).

The following dosage forms have been accepted:

Hypodermic Tablets Ephedrine Hydrochloride-Lilly, 0.016 Gm. (¼ grain).

Hypodermic Tablets Ephedrine Hydrochloride-Lilly, 0.0325 Gm. (½ grain).

EPHEDRINE SULPHATE-LILLY (See New and Nonofficial Remedies, 1929, p. 169).

The following dosage forms have been accepted:

Hypodermic Tablets Ephedrine Sulphate-Lilly, 0.016 Gm. (¼ grain).

Hypodermic Tablets Ephedrine Sulphate-Lilly, 0.0325 Gm. (½ grain).

Syrup No. 110 Ephedrine Sulphate: Containing ephedrine sulphate-Lilly, 0.22 Gm., in 100 cc. (1 grain per fluidounce) and alcohol 12 per cent; it is flavored with vanillin, benzaldehyde and tolu, and tinted with amaranth.

Syrup No. 111 Ephedrine Sulphate: Containing ephedrine sulphate-Lilly, 0.44 Gm., in 100 cc. (2 grains per fluidounce) and alcohol, 12 per cent; it is flavored with vanillin, benzaldehyde and tolu, and tinted with amaranth.

NEOCINCHOPHEN (See New and Nonofficial Remedies, 1929, p. 114).

Neocinchophen-B. P. C.—A brand of neocinchophen-N. N. R.

Manufactured by Benzol Products Company, Newark, N. J., under U. S. patent 1,045,759 (Nov. 26, 1912; expires 1929), by license of The Chemical Foundation, Inc.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

W. A. PUCKNER, Secretary.

PITUITARY LIQUID (SURGICAL) ARMOUR, PITUGLANDOL-ROCHE, PITUITARY EXTRACT-LEDERLE 20 UNITS, PITUITARY EXTRACT-LILLY (SURGICAL), PITUITARY EXTRACT SURGICAL-MERRELL, SOLUTION PITUITARY EXTRACT SURGICAL-MULFORD, PITUITRIN "S" (SURGICAL) AND PITUITARY SOLUTION SURGICAL-WILSON OMITTED FROM N. N. R.

A reliable method of standardization for pituitary was made official in the tenth edition of the U. S. Pharmacopeia. This was highly desirable in view of wide variation then prevalent in commercial products of this class. While up to that time the Council had recognized solutions of pituitary of various strengths, when an exact standard had been made available, the Council decided that it was not in the interest of rational therapy to market strengths different from that of the standard pharmacopeial product. The Council decided to omit all pituitary solutions differing from the pharmacopeial strength at the close of the longest period for which any such preparation stood accepted. This period expired at the close of 1928. Accordingly, the following products were omitted from New and Nonofficial Remedies: Pituitary Liquid (Surgical) Armour; Pituglandol-Roche; Pituitary Extract-Lederle 20 Units; Pituitary Extract-Lilly (Surgical); Pituitary Extract Surgical-Merrell; Solution Pituitary Extract Surgical-Mulford; Pituitrin "S" (Surgical), and Pituitary Solution Surgical-Wilson.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1929 BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The statistics presented for the year ending June 30, 1929, are based on reports received from the medical colleges and other reliable sources. We acknowledge here the kind cooperation of the officers of the colleges who have made the compilation of these statistics possible.

STATISTICS OF COLLEGES

Table 1, pages 526 and 527, gives the recognized medical colleges in session during 1928-1929; the population of the city; the rating given by the Council on Medical Education and Hospitals; the number of students, men and women, registered during the year; the number of 1929 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual instruction in the college year; the total fees for each year; the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 535 are given the essential facts concerning all medical colleges arranged by states.

It is interesting to note that all medical schools heretofore rated in class B either have made sufficient improvements to secure the class A rating or have ceased to exist. Two years ago Temple University College of Medicine at Philadelphia and Queen's University Faculty of Medicine, Kingston, Ontario, were granted the class A rating and this year Laval University Faculty of Medicine at Quebec was raised to class A. This year the New York Homeopathic Medical College and Flower Hospital has made sufficient improvements, also, to justify its receiving the higher rating. It is interesting to note that in the light of scientific investigation sectarianism in medicine has practically disappeared. Two schools remain which bear homeopathic names which, however, are now teaching pharmacology and therapeutics the same as all other medical schools.

HOME STATES OF MEDICAL STUDENTS

Table 2, pages 528 and 529, shows from what states the students came who were in attendance at each medical college during the session of 1928-1929. The states having medical colleges naturally contribute larger numbers of students than those which have no medical colleges.

The state furnishing the largest number of students this year was New York with 2,994, followed by Pennsylvania with 1,820, Illinois with 1,304, and Ohio with 1,227. There were 1,218 students who came from the twelve states not having medical schools: four of these states furnished more than 100 students each, these being New Jersey, 674; Washington, 151; Rhode Island, 127, and Florida, 116. Of these noncollege states, New Mexico had fifteen, Nevada eighteen and Wyoming eleven. There were 149 students who came from government possessions, Hawaii, Porto Rico and the Philippine Islands, and 286 from foreign countries.

NUMBER OF STUDENTS BY CLASSES

In table 3, page 531, the students enrolled in each college are shown by classes. The total attendance for the first year was 6,277, or seventy-eight more than last year; for the second year, 5,304, or 114 more than last year; for the third year, 4,746, or 100 more than last year; while in the fourth year there were 4,551, or forty-one more than in 1928.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (table 5) in the United States for the year ending June 30, 1929, excluding premedical, special and postgraduate students, was 20,878, an increase of 333 over last year. This is the largest enrolment of students since 1910, nineteen years ago. There has been an average increase in enrolment since 1919 of about 500 students each year.

NUMBER OF MEDICAL GRADUATES

The total number of graduates (table 6) for the year ending June 30, 1929, was 4,446, or 184 more than last year.

As shown in chart 1, although the total number of graduates decreased from 5,747 in 1904 to 2,529 in 1922, the number of graduates coming from the higher grade well equipped schools has increased from 267 in 1906 to 2,929 in 1921. The lower number graduating in 1922 is due to the World War and represents the students who began as freshmen in 1918. Note that since 1922 the number of graduates has rapidly increased until this year 4,446 graduated.

MEDICAL SCHOOLS AND BACCALAUREATE DEGREES

Of the 4,446 medical graduates (table 7) 2,951, or 243 more than last year, had also obtained degrees in arts and sciences. This year 66.4 per cent of all graduates held collegiate degrees, as compared with only 15.3 per cent of the graduates in 1910. As noted in table 10, of the 2,951 graduates holding baccalaureate degrees, 397, the largest number, came from the Illinois medical colleges. The New York schools reported 382; Pennsylvania, 294; Massachusetts, 193, and Ohio, 145. All the better medical schools are now requiring two or more years of college work for admission, which brings more students within reach of the combined courses for the B.S. and M.D. degrees.

Table 7 shows for various medical schools the percentage of their graduates this year who had also obtained baccalaureate degrees either prior to entering the medical school or, through combined courses, at the end of the first, second, third, fourth or fifth years of the medical course. In the fourth column is given the percentage of all graduates who have not obtained baccalaureate degrees. As noted, the colleges are arranged emphasizing those whose graduating classes were most lacking in baccalaureate degrees. As a rule,

(Continued on page 528)

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES, PHILIPPINE ISLANDS AND CANADA

Marginal No.	NAME AND LOCATION OF COLLEGE	Population of City Where College is Located (Census Bureau Estimate of 1928.)#	Classification by Council on Med. Education	Number of Students Registered, 1928-29		Graduates, 1929		Graduates with A.B., B.S. or Ph.B.	No. of Teachers	Weeks in College Year	Total Fees [Dollars]				Executive Officer	Session of 1929-30		Marginal No.
				Men	Women	Men	Women				1st Year	2d Year	3d Year	4th Year		Begins 1929	Ends 1930	
	ALABAMA			**102**														
1	University of Alabama School of Medicine, University (Tuscaloosa)*	13,300	A	102	..	..	..	..	18	33	222	222	...	...	Stuart Graves, M.D., Dean	Sept. 9	May 27	1
	ARKANSAS			**153**	..	**43**	..	**26**										
2	University of Arkansas School of Medicine, Little Rock [2]	79,200	A	153	..	43	..	26	69	36	115	110	105	105	Frank Vinsonhaler, M.D., Dean	Sept. 16	June 3	2
	CALIFORNIA			**723**	**75**	**128**	**26**	**134**										
3	College of Medical Evangelists, Los Angeles [1]	576,673	A	315	25	54	11	47	220	387	253	245	329	313	Newton Evans, M.D., Dean	Sept. 4	June 22	3
4	Stanford University School of Medicine, San Francisco [1]	583,300	A	170	13	42	6	48	196	33	347	323	315	315	William Ophüls, M.D., Dean	Oct. 1	June 11	4
5	University of California Medical School, San Francisco [1,2]	583,300	A	189	32	32	8	39	280	35	290	225	225	225	Langley Porter, M.D., Dean	Aug. 20	May 14	5
6	University of Southern California School of Medicine, Los Angeles	576,673	..	49	5	..	..	..	16	34	320	320	...	...	William D. Cutter, M.D., Dean	Sept. 16	June 6	6
	COLORADO			**181**	**11**	**39**	**1**	**14**										
7	University of Colorado School of Medicine, Denver [2]	294,200	A	181	11	39	1	14	160	34	211	231	181	191	Maurice H. Rees, M.D., Dean	Sept. 30	June 16	7
	CONNECTICUT			**190**	**17**	**36**	**3**	**39**										
8	Yale University School of Medicine, New Haven	187,900	A	190	17	36	3	39	190	34	305	300	300	320	Milton C. Winternitz, M.D., Dean	Sept. 26	June 11	8
	DISTRICT OF COLUMBIA			**977**	**20**	**176**	**4**	**100**										
9	Georgetown University School of Medicine, Washington	552,000	A	473	..	75	..	41	165	34	390	330	300	350	John A. Foote, M.D., Dean	Sept. 26	June 9	9
10	George Washington University Medical School, Washington	552,000	A	279	11	58	3	30	193	36	422	422	388	388	William C. Borden, M.D., Dean	Sept. 25	June 11	10
11	Howard University School of Medicine, Washington	552,000	A	225	9	43	1	29	62	32	263	258	258	265	Numa P. G. Adams, M.D., Dean	Oct. 2	June 6	11
	GEORGIA			**321**	**5**	**74**	**1**	**30**										
12	Emory University School of Medicine, Atlanta	255,100	A	191	..	40	..	22	140	32	260	250	250	275	Russel H. Oppenheimer, M.D., Dean	Oct. 1	June 10	12
13	University of Georgia Medical Department, Augusta [2]	56,700	A	130	5	34	1	8	71	34	105	100	100	100	William H. Goodrich, M.D., Dean	Sept. 21	June 2	13
	ILLINOIS			**1,955**	**103**	**457**	**18**	**397**										
14	Loyola University School of Medicine, Chicago [1]	3,157,400	A	442	19	76	4	75	221	35	300	300	300	300	Louis D. Moorhead, M.D., Dean	Sept. 30	June 14	14
15	Northwestern University Medical School, Chicago [1]	3,157,400	A	490	12	121	..	80	326	36	355	355	355	355	Irving S. Cutter, M.D., Dean	Oct. 1	June 16	15
16	University of Chicago, Rush Medical College [1]	3,157,400	A	319	29	142	7	147	241	36	...	...	315	325	Ernest E. Irons, M.D., Dean	Oct. 1	June 17	16
17	University of Chicago School of Medicine	3,157,400	A	212	26	..	..	..	144	36	300	300	...	...	B. C. H. Harvey, M.D., Dean	Oct. 1	June 12	17
18	University of Illinois College of Medicine, Chicago [1,2]	3,157,400	A	492	17	118	7	95	254	32	165	165	165	170	David John Davis, M.D., Dean	Sept. 30	June 7	18
	INDIANA			**403**	**14**	**94**	**6**	**96**										
19	Indiana University School of Medicine, Bloomington-Indianapolis [2]	382,100	A	403	14	94	6	96	230	34	190	175	175	185	Charles P. Emerson, M.D., Dean	Sept. 18	June 9	19
	IOWA			**458**	**25**	**81**	**4**	**54**										
20	State University of Iowa College of Medicine, Iowa City [2]	16,500	A	458	25	81	4	54	94	34	202	192	192	207	Henry S. Houghton, M.D., Dean	Sept. 23	June 2	20
	KANSAS			**210**	**13**	**37**	**6**	**34**										
21	University of Kansas School of Medicine, Lawrence-Kansas City [2,6]	509,300	A	210	13	37	6	34	138	35	162	154	155	160	Harry R. Wahl, M.D., Dean	Sept. 19	June 9	21
	KENTUCKY			**318**	**4**	**67**	**1**	**34**										
22	University of Louisville School of Medicine, Louisville	329,400	A	318	4	67	1	34	122	32	365	365	370	380	John Walker Moore, M.D., Dean	Sept. 16	May 30	22
	LOUISIANA			**424**	**14**	**101**	**2**	**59**										
23	Tulane University of Louisiana School of Medicine, New Orleans	429,400	A	424	14	101	2	59	153	32	305	295	280	310	Charles C. Bass, M.D., Dean	Sept. 25	June 11	23
	MARYLAND			**646**	**49**	**159**	**10**	**124**										
24	Johns Hopkins University School of Medicine, Baltimore	830,400	A	247	36	57	9	66	325	34	610	610	610	610	Lewis H. Weed, M.D., Dean	Oct. 1	June 10	24
25	Univ. of Maryland School of Med. and Coll. of P. & S., Baltimore [2]	830,400	A	399	13	102	1	58	225	34	335	325	325	340	J. M. H. Rowland, M.D., Dean	Sept. 30	June 7	25
	MASSACHUSETTS			**1,174**	**48**	**285**	**14**	**193**										
26	Boston University School of Medicine, Boston [2]	799,200	A	189	25	38	11	32	159	32	371	367	342	352	Alexander S. Begg, M.D., Dean	Sept. 25	June 16	26
27	Harvard University Medical School, Boston	799,200	A	515	..	137	..	128	407	36	405	400	400	400	David L. Edsall, M.D., Dean	Sept. 24	June 19	27
28	Tufts College Medical School, Boston	799,200	A	470	23	110	3	33	210	32	357	352	352	362	Albert W. Stearns, M.D., Dean	Sept. 25	May 31	28
	MICHIGAN			**880**	**34**	**197**	**8**	**122**										
29	University of Michigan Medical School, Ann Arbor [2]	22,700	A	634	30	152	6	108	118	36	198	193	193	191	Hugh Cabot, M.D., Dean	Sept. 30	June 23	29
30	Detroit College of Medicine and Surgery, Detroit [1,2]	1,378,900	A	246	4	45	2	14	134	36	200	200	200	200	W. H. MacCraken, M.D., Dean	Sept. 26	June 21	30
	MINNESOTA			**461**	**23**	**111**	**8**	**108**										
31	University of Minnesota Medical School, Minneapolis [1,2]	455,900	A	461	23	111	8	108	311	36	225	225	225	225	Elias P. Lyon, M.D., Dean	Sept. 30	June 14	31
	MISSISSIPPI			**62**	**1**	..	..	..										
32	University of Mississippi School of Medicine, University (Oxford)* [2]	2,150	A	62	1	..	..	..	17	34	163	163	...	...	Joseph O. Crider, M.D., Dean	Sept. 18	June 3	32
	MISSOURI			**907**	**9**	**131**	**2**	**94**										
33	University of Missouri School of Medicine, Columbia * [2]	10,700	A	80	..	..	..	..	31	35	141	126	...	...	Guy L. Noyes, M.D., Dean	Sept. 11	June 4	33
34	St. Louis University School of Medicine, St. Louis	848,100	A	536	..	109	..	49	262	32	380	375	375	395	Alphonse M. Schwitalla, Ph.D., Dean	Sept. 23	June 4	34
35	Washington University School of Medicine, St. Louis	848,100	A	291	9	72	2	45	227	36	372	367	367	372	McKim Marriott, M.D., Dean	Sept. 26	June 10	35
	NEBRASKA			**506**	**6**	**125**	**1**	**86**										
36	Creighton University School of Medicine, Omaha	222,800	A	198	2	50	..	44	100	35	295	285	280	295	Herman von W. Schulte, M.D., Dean	Sept. 26	June 5	36
37	University of Nebraska College of Medicine, Omaha [2]	222,800	A	308	4	75	1	42	131	35	217	212	212	212	J. Jay Keegan, M.D., Dean	Sept. 20	June 7	37
	NEW HAMPSHIRE			**39**	..	..	..	..										
38	Dartmouth Medical School, Hanover *	1,551	A	39	0	..	..	..	19	34	410	400	...	...	John P. Bowler, M.D., Dean	Sept. 19	June 17	38

	NEW YORK		**2,474**	**140**	**534**	**33**	**382**												
39	Albany Medical College, Albany	120,400	A	119	3	21	0	14	83	36	320	315	305	305	Thomas Ordway, M.D., Dean	Sept. 23	June 9	39
40	University of Buffalo School of Medicine, Buffalo	555,800	A	273	0	63	0	15	208	34	527	517	517	527	Edward W. Koch, M.D., Act. Dean	Sept. 25	June 10	40
41	Columbia University College of Phys. and Surgs., New York City	6,017,500	A	383	37	92	15	100	589	33	535	520	520	540	William Darrach, M.D., Dean	Sept. 25	June 4	41
42	Cornell University Medical College, New York City	6,017,500	A	222	37	53	10	63	228	34	510	500	500	535	G. Canby Robinson, M.D., Dean	Oct. 1	June 12	42
43	Long Island College Hospital, New York City-Brooklyn	2,308,500	A	432	8	100	3	45	234	32	545	550	530	560	Adam M. Miller, A.M., Dean	Sept. 30	June 7	43
44	New York Homeopathic Medical College and Flower Hospital	6,017,500	A	320	7	49	1	14	136	34	540	530	530	560	Claude A. Burrett, M.D., Dean	Sept. 16	June 1	44
45	University and Bellevue Hospital Medical College, New York City	6,017,500	A	456	21	90	5	96	224	35	535	523	512	533	Samuel A. Brown, M.D., Dean	Sept. 18	June 11	45
46	University of Rochester School of Medicine, Rochester	328,200	A	99	10	17	1	15	123	34	300	300	300	300	George H. Whipple, M.D., Dean	Sept. 23	June 9	46
47	Syracuse University College of Medicine, Syracuse	199,300	A	170	11	37	3	20	162	34	400	400	400	410	Herman G. Weiskotten, M.D., Dean	Sept. 20	June 9	47
	NORTH CAROLINA			**124**	**6**	..	..	..											
48	University of North Carolina School of Medicine, Chapel Hill *	1,483	A	71	5	..	..	..	12	35	220	220	...	...	I. H. Manning, M.D., Dean	Sept. 18	June 9	48
49	Wake Forest College School of Medicine, Wake Forest *	1,425	A	53	1	..	..	..	16	36	220	225	...	...	Thurman D. Kitchin, M.D., Dean	Sept. 16	June 6	49
	NORTH DAKOTA			**55**	**2**	..	..	..											
50	University of N. Dakota School of Med., University (Grand Forks)* [2]	15,400	A	55	2	..	..	..	13	35	65	65	...	...	Harley E. French, M.D., Dean	Sept. 16	June 10	50
	OHIO			**830**	**45**	**220**	**11**	**145**											
51	Eclectic Medical College, Cincinnati	413,700	B	35	..	34	..	9	...	..	...	...	...	...	.....	.....	.....		51
52	University of Cincinnati College of Medicine [1,2]	413,700	A	256	13	63	4	54	219	35	360	360	300	220	Arthur C. Bachmeyer, M.D., Dean	Sept. 22	June 14		52
53	Western Reserve University School of Medicine, Cleveland	1,010,300	A	227	16	49	2	51	199	34	375	360	350	360	Torald L. Sollmann, M.D., Dean	Sept. 26	June 12		53
54	Ohio State University College of Medicine, Columbus [2]	299,000	A	312	16	74	5	31	166	34	193	183	186	191	John H. J. Upham, M.D., Dean	Oct. 1	June 9		54
	OKLAHOMA			**189**	**3**	**38**	..	**34**											
55	University of Oklahoma School of Medicine, Oklahoma City [2]	91,295	A	189	3	38	0	34	103	36	108	106	28	28	LeRoy Long, M.D., Dean	Sept. 16	June 3		55
	OREGON			**215**	**14**	**53**	**3**	**56**											
56	University of Oregon Medical School, Portland [2]	258,288	A	215	14	53	3	56	196	33	200	195	190	190	Richard B. Dillehunt, M.D., Dean	Oct. 2	June 9		56
	PENNSYLVANIA			**1,954**	**129**	**444**	**27**	**294**											
57	Hahnemann Medical College and Hospital of Philadelphia	2,064,200	A	430	0	63	0	12	130	34	350	352	352	375	William A. Pearson, M.D., Dean	Sept. 30	June 12		57
58	Jefferson Medical College of Philadelphia	2,064,200	A	585	0	142	0	72	216	34	440	430	425	425	Ross V. Patterson, M.D., Dean	Sept. 23	June 6		58
59	Temple University School of Medicine, Philadelphia	2,064,200	A	217	3	47	1	7	149	35	415	390	390	390	William N. Parkinson, M.D., Dean	Sept. 25	June 23		59
60	University of Pennsylvania School of Medicine, Philadelphia	2,064,200	A	476	13	130	4	129	279	33	420	400	400	400	William Pepper, M.D., Dean	Sept. 27	June 18		60
61	Woman's Medical College of Pennsylvania, Philadelphia	2,064,200	A	0	98	0	18	15	78	36	350	375	400	400	Martha Tracy, M.D., Dean	Sept. 18	June 11		61
62	University of Pittsburgh School of Medicine, Pittsburgh	673,800	A	246	15	62	4	59	207	34	415	400	400	410	Raleigh R. Huggins, M.D., Dean	Sept. 23	June 11		62
	SOUTH CAROLINA			**146**	**7**	**23**	**3**	**12**											
63	Medical College of the State of South Carolina, Charleston	75,900	A	146	7	23	3	12	65	35	170	170	170	170	Robert Wilson, M.D., Dean	Sept. 26	June 5		63
	SOUTH DAKOTA			**52**	..	..	..	..											
64	University of South Dakota School of Medicine, Vermilion * [2]	2,590	A	52	0	..	..	..	11	35	102	102	...	...	George R. Albertson, M.D., Dean	Sept. 18	June 14		64
	TENNESSEE			**752**	**23**	**190**	**3**	**105**											
65	University of Tennessee College of Medicine, Memphis [2]	190,200	A	367	11	71	1	26	188	36	177	165	150	167	Orren W. Hyman, Ph.D., Adm. Officer	Sept. 30	June 14		65
66	Meharry Medical College, Nashville	139,600	A	215	1	48	0	37	45	32	218	210	210	220	John J. Mullowney, M.D., Pres.	Oct. 1	May 22		66
67	Vanderbilt University School of Medicine, Nashville	139,600	A	170	11	41	2	42	175	35	315	315	315	320	Waller S. Leathers, M.D., Dean	Sept. 24	June 11		67
	TEXAS			**605**	**26**	**107**	**6**	**61**											
68	Baylor University College of Medicine, Dallas	217,800	A	342	14	58	4	27	126	33	307	282	282	282	Walter H. Moursund, M.D., Dean	Sept. 23	June 2		68
69	University of Texas School of Medicine, Galveston [2]	50,600	A	263	12	49	2	34	58	34	82	78	66	78	George E. Bethel, M.D., Dean	Oct. 1	May 31		69
	UTAH			**54**	**1**	..	..	..											
70	University of Utah School of Medicine, Salt Lake City *	138,000	A	54	1	..	..	..	16	36	150	150	...	...	Beryl I. Burns, M.D., Dean	Sept. 26	June 3		70
	VERMONT			**131**	**9**	**29**	**1**	**7**											
71	University of Vermont College of Medicine, Burlington [2]	24,300	A	131	9	29	1	7	60	36	328	328	300	325	James N. Jenne, M.D., Dean	Sept. 18	June 16		71
	VIRGINIA			**802**	**12**	**141**	**2**	**32**											
72	Medical College of Virginia, Richmond [2]	194,400	A	366	5	89	1	17	143	35	308	308	293	323	Manfred Call, M.D., Dean	Sept. 17	June 3		72
73	University of Virginia Dept. of Med., University (Charlottesville) [2]	11,305	A	236	7	52	1	15	69	36	290	290	265	255	James C. Flippin, M.D., Dean	Sept. 12	June 10		73
	WEST VIRGINIA			**109**	**4**	..	..	..											
74	West Virginia University School of Medicine, Morgantown * [2]	14,100	A	109	4	..	..	..	20	35	115	115	...	...	John N. Simpson, M.D., Dean	Sept. 16	June 2		74
	WISCONSIN			**568**	**33**	**91**	**7**	**70**											
75	University of Wisconsin Medical School, Madison [2,4]	50,500	A	265	29	39	5	43	107	36	150	150	150	150	Charles R. Bardeen, M.D., Dean	Sept. 25	[4]June 23		75
76	Marquette University School of Medicine, Milwaukee [1]	544,200	A	301	4	52	2	36	153	34	314	304	304	289	Bernard F. McGrath, M.D., Dean	Sept. 23	June 11		76
	PHILIPPINE ISLANDS			**971**	**59**	**92**	**3**	**5**											
77	University of the Philippines, College of Med. and Surg., Manila	285,306	..	270	59	28	3	5	92	37	102	85	65	70	Fernando Calderon, M.D., Dean	June 10	Mar. 24		77
78	University of St. Thomas, College of Medicine and Surgery, Manila [5]	285,306	..	701	0	64	0	0	49	36	75	75	75	75	Jose L. de Castro, M.D., Dean	June 18	Mar. 21		78
	CANADA [6]			**2,443**	**125**	**384**	**22**	**147**											
79	University of Alberta Faculty of Medicine, Edmonton, Alta	69,744	A	155	8	16	1	3	76	30	207	207	207	207	Allan C. Rankin, M.D., Dean	Sept. 27	May 15		79
80	Dalhousie University Faculty of Medicine, Kingston, Ont.	60,000	A	127	3	13	3	5	62	34	225	225	225	225	John Stewart, M.D., Dean	Sept. 16	May 13		80
81	Queen's University Faculty of Medicine, Kingston, Ont.	21,753	A	314	0	51	0	13	54	30	168	176	176	201	J. C. Connell, M.D., Dean	Sept. 25	May 28		81
82	University of Toronto Faculty of Medicine, Toronto, Ont.	569,899	A	646	71	98	10	26	262	30	171	221	221	221	Alexander Primrose, M.D., Dean	Sept. 21	May 24		82
83	University of Western Ontario Medical School, London, Ont.	60,959	A	126	11	29	1	4	77	31	200	200	208	233	A. B. Macallum, M.D., Dean	Sept. 24	May 30		83
84	McGill University Faculty of Medicine, Montreal, Que.	1,032,385	A	448	15	61	2	25	196	35	267	267	267	267	Charles F. Martin, M.D., Dean	Sept. 18	May 28		84
85	University of Montreal Medical Faculty, Montreal, Que.	1,032,385	A	168	1	38	0	31	105	36	225	207	244	220	Louis de Lotbiniere Harwood, M.D., Dean	Sept. 15	June 15		85
86	Laval University Faculty of Medicine, Quebec, Que.	133,000	A	258	0	33	0	29	50	35	160	170	160	160	Arthur Rousseau, M.D., Dean	Sept. 10	June 13		86
87	University of Manitoba Faculty of Medicine, Winnipeg, Man.	202,377	A	206	16	45	5	11	135	32	205	200	210	210	S. Willis Prowsie, M.D., Dean	Sept. 30	May 25		87

* Gives only the first two years of the medical course.

Where no estimates were made for 1928 the census figures for 1920 or the estimate census figures for 1925 are given.

1. Hospital internships required for graduation. See table 4 for the fifth year registration.

2. The following universities make an additional charge for nonresidents: Arkansas, $100; California, $300; Colorado, $105; Georgia, $200; Illinois, $35; Indiana, $75; Iowa, $264; Kansas, $50; Maryland, $150; Michigan, $80; Detroit, $85; Minnesota, $75; Mississippi, $50; Missouri, $10 per term; Nebraska, varies according to states of residence; North Dakota, $70; Ohio State, $105; Cincinnati, $50 (nonresidents of Cincinnati); Oklahoma, $200; Oregon, $60; South Dakota, $50; Tennessee, $125; Texas, $150; Vermont, $75; Virginia, $20; Medical College of Virginia, $100; West Virginia, $250 and Wisconsin, $150.

3. Total fees are $5 additional each year for men.

4. Wisconsin's fourth year session is July 1, 1929, to June 31, 1930.

5. The figures given are for the 1927-1928 session.

6. See College Items for fifth and sixth year fees.

7. Twelve months each for first two years. See College Items.

8. The population given is for Kansas City, Kansas, and Kansas City, Missouri.

(Continued from page 525)

medical schools affiliated with junior colleges or others having special classes for premedical students have the smallest numbers of students holding baccalaureate degrees. The best premedical preparation, it is believed, is that obtained by students in the courses leading to the degree of Bachelor of Arts or Science in the college or university attended, since on the university campus they come in contact with students preparing for various other professions or lines of activity and have obtained a knowledge of such professions and activities before selecting their own life work.

It must not be inferred from these statements that a baccalaureate degree should in any sense be made a requirement for the obtaining of either a medical degree or the right to practice medicine. With the requirement of two or more years of premedical study, medical education in the United States is now on a par with the requirements in other countries. There is no objection

TABLE 2.—*Distribution of Medical*

Marginal Number	NAME OF COLLEGE	1 Alabama 269	2 Arizona 26	3 Arkansas 195	4 California 740	5 Colorado 188	6 Connecticut 302	7 Delaware 36	8 Dist. Columbia 204	9 Florida 116	10 Georgia 313	11 Idaho 55	12 Illinois 1,304	13 Indiana 512	14 Iowa 579	15 Kansas 304	16 Kentucky 265	17 Louisiana 220	18 Maine 72	19 Maryland 261	20 Massachusetts 742	Marginal Number
1	University of Alabama School of Medicine	53	1	1	..	..	..	..	..	1	2	..	1	..	..	1	6	..	..	..	..	1
2	University of Arkansas School of Medicine	2	..	129	..	..	1	..	..	1	1	..	2	2	1	2	1	2	..	..	..	2
3	College of Medical Evangelists	..	..	1	72	7	..	..	6	3	..	4	6	6	4	11	4	..	1	3	8	3
4	Stanford University School of Medicine	..	1	1	159	2	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	4
5	University of California Medical School	..	..	..	218	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	5
6	University of Southern California School of Medicine	..	1	..	49	..	1	..	..	..	..	..	..	..	1	..	..	..	..	1	..	6
7	University of Colorado School of Medicine	1	..	1	11	143	1	..	1	..	..	..	2	..	..	3	..	..	..	..	1	7
8	Yale University School of Medicine	..	..	..	3	1	77	..	..	2	1	..	1	1	..	1	..	..	3	..	20	8
9	Georgetown University School of Medicine	..	..	..	3	..	26	1	57	2	..	1	..	..	..	..	1	..	..	12	22	9
10	George Washington University Medical School	2	1	..	2	..	7	..	78	..	..	4	..	2	..	..	1	..	1	9	3	10
11	Howard University School of Medicine	9	..	3	..	..	2	1	20	6	16	..	1	..	..	..	1	2	..	12	1	11
12	Emory University School of Medicine	29	..	..	..	..	1	..	..	16	105	..	..	..	..	..	..	..	..	..	..	12
13	University of Georgia Medical Department	..	..	..	..	..	..	..	..	..	133	..	..	..	..	..	..	..	..	..	..	13
14	Loyola University School of Medicine	..	..	..	5	4	5	..	..	3	..	..	275	13	8	1	1	..	..	..	2	14
15	Northwestern University Medical School	5	4	1	30	2	..	..	..	..	1	6	185	14	13	16	2	1	..	..	2	15
16	University of Chicago School of Medicine	..	3	..	1	1	2	..	1	1	..	1	95	4	14	3	3	..	..	1	5	16
17	University of Chicago, Rush Medical College	11	..	3	3	1	..	..	..	2	2	4	102	14	25	9	4	1	..	1	3	17
18	University of Illinois College of Medicine	1	..	..	1	..	..	..	..	..	..	..	455	4	5	1	1	..	..	..	2	18
19	Indiana University School of Medicine	..	..	1	..	..	..	..	1	..	..	..	2	400	..	..	..	..	..	..	..	19
20	State University of Iowa College of Medicine	2	..	..	2	..	..	..	..	..	..	1	2	..	429	2	..	..	..	..	2	20
21	University of Kansas School of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..	2	177	..	..	..	..	..	21
22	University of Louisville School of Medicine	8	..	1	1	..	1	..	..	2	..	6	4	20	..	2	152	..	..	..	..	22
23	Tulane University of Louisiana School of Medicine	50	2	8	11	..	..	1	..	27	6	..	..	1	..	..	..	156	..	..	..	23
24	Johns Hopkins University School of Medicine	5	..	3	11	..	14	..	10	1	6	1	5	..	..	1	1	2	4	38	10	24
25	University of Maryland Sch. of Med. & Coll. of P. & S.	..	..	..	1	..	12	3	4	2	..	..	1	..	..	..	1	..	..	146	2	25
26	Boston University School of Medicine	..	..	..	..	..	13	..	..	1	..	..	..	..	..	1	..	..	16	..	108	26
27	Harvard University Medical School	7	2	..	21	6	11	1	2	3	10	2	16	3	7	8	3	..	15	3	129	27
28	Tufts College Medical School	..	..	..	1	..	39	..	..	..	..	..	..	..	..	..	..	..	14	..	339	28
29	University of Michigan Medical School	2	1	..	7	3	1	..	3	3	2	1	8	12	2	..	9	..	1	2	2	29
30	Detroit College of Medicine and Surgery	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	30
31	University of Minnesota Medical School	1	..	..	1	1	1	..	1	..	..	1	2	..	2	2	..	..	..	..	..	31
32	University of Mississippi School of Medicine	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32
33	University of Missouri School of Medicine	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	33
34	St. Louis University School of Medicine	2	4	1	24	2	6	..	1	2	..	2	43	10	6	16	3	5	..	2	1	34
35	Washington University School of Medicine	..	..	10	16	4	..	..	1	..	1	1	38	4	4	12	4	..	..	..	..	35
36	Creighton University School of Medicine	..	..	..	34	2	..	..	..	..	1	2	2	..	30	11	..	..	..	..	..	36
37	University of Nebraska College of Medicine	1	..	..	1	3	..	..	..	..	..	1	1	..	9	5	..	..	..	..	..	37
38	Dartmouth Medical School	..	..	..	1	3	3	..	2	..	..	..	..	..	1	..	..	..	..	..	9	38
39	Albany Medical College	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	1	..	6	39
40	University of Buffalo School of Medicine	..	..	..	2	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	3	40
41	Columbia University College of Physicians and Surgeons	1	2	..	2	1	14	..	3	1	2	1	3	..	..	1	1	..	2	2	9	41
42	Cornell University Medical College	2	1	..	5	..	3	..	1	..	2	..	1	1	2	1	1	..	2	1	8	42
43	Long Island College Hospital	..	..	..	1	1	7	..	..	..	..	..	1	..	..	..	..	..	..	..	..	43
44	New York Homeopathic Med. Coll. & Flower Hospital	..	..	..	..	..	2	..	..	1	..	..	1	3	..	..	..	..	..	..	..	44
45	University and Bellevue Hospital Medical College	..	..	..	1	..	9	..	..	..	..	..	..	1	1	..	..	..	..	..	2	45
46	University of Rochester School of Medicine	..	..	..	3	..	3	..	..	..	1	..	1	..	..	..	..	..	1	4	6	46
47	Syracuse University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	47
48	University of North Carolina School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	48
49	Wake Forest College School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	49
50	University of North Dakota School of Medicine	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	50
51	Eclectic Medical College, Cincinnati	..	..	..	1	..	1	..	..	..	..	..	2	1	..	4	..	..	..	..	..	51
52	University of Cincinnati College of Medicine	..	..	..	3	..	1	..	..	1	..	..	2	6	..	1	24	..	..	..	..	52
53	Western Reserve University School of Medicine	..	..	1	..	..	..	..	..	2	..	1	2	2	1	1	..	..	..	1	..	53
54	Ohio State University College of Medicine	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	54
55	University of Oklahoma School of Medicine	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	55
56	University of Oregon Medical School	..	..	..	11	..	..	..	..	..	..	9	..	..	..	..	..	..	..	..	..	56
57	Hahnemann Med. Coll. and Hospital of Philadelphia	1	..	..	..	..	4	10	2	..	..	..	1	3	..	1	3	..	1	2	2	57
58	Jefferson Medical College of Philadelphia	3	2	1	3	..	17	6	1	4	2	..	3	1	..	1	1	..	3	8	8	58
59	Temple University School of Medicine	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	..	..	..	1	59
60	University of Pennsylvania School of Medicine	4	..	..	4	1	3	10	2	9	..	1	4	3	1	2	4	..	3	1	6	60
61	Woman's Medical College of Pennsylvania	1	..	..	3	..	..	1	..	..	..	..	..	..	2	1	1	..	..	3	1	61
62	University of Pittsburgh School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	62
63	Medical College of the State of South Carolina	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	63
64	University of South Dakota School of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	..	3	1	2	..	..	..	..	64
65	University of Tennessee College of Medicine	26	..	20	1	..	..	..	..	4	2	..	1	..	..	3	10	7	..	..	..	65
66	Meharry Medical College	10	..	6	1	..	2	1	2	5	12	..	13	1	1	..	2	8	..	4	5	66
67	Vanderbilt University School of Medicine	20	..	7	2	..	..	..	..	3	3	1	..	3	..	2	28	2	..	..	..	67
68	Baylor University College of Medicine	2	..	4	1	..	..	..	..	1	..	..	..	..	1	1	2	10	..	1	..	68
69	University of Texas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	69
70	University of Utah School of Medicine	..	..	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	70
71	University of Vermont College of Medicine	..	..	..	1	..	7	..	..	..	..	..	1	..	..	..	..	..	2	..	17	71
72	Medical College of Virginia	..	1	..	..	..	1	..	3	2	1	..	1	..	..	..	4	..	1	1	..	72
73	University of Virginia Department of Medicine	3	..	1	..	..	..	..	2	2	1	..	..	..	..	..	1	..	..	2	1	73
74	West Virginia University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	74
75	University of Wisconsin Medical School	1	..	..	..	..	..	..	..	1	..	1	6	1	..	1	..	..	..	1	1	75
76	Marquette University School of Medicine	1	..	..	..	..	1	..	..	..	..	..	4	3	4	2	..	..	1	..	..	76
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

to any medical school which so desires to require entrance qualifications in excess of two years and students who have the time and means also have the unquestioned right to continue their college education and obtain the degree if they so desire. It is believed, however, that provision should always be made for students otherwise exceptionally qualified who cannot obtain the two extra years of college work.

As to medical licensure, the Council on Medical Education and Hospitals, from the first, has believed that the minimum premedical requirement should not exceed two years of college education.

WOMEN IN MEDICINE

During the last year there were 925 women studying medicine, or four less than the year before. The percentage of women to all medical students this year is 4.43. There were 214 women graduates this year, seven more than last year. Of all the women matriculants, ninety-eight were in attendance at and eighteen gradu-

Students by States

Marginal Number	Michigan.....841	Minnesota.....584	Mississippi.....203	Missouri.....459	Montana.....69	Nebraska.....375	Nevada.....18	New Hampshire..69	New Jersey.....674	New Mexico.....15	New York.....2,994	North Carolina 464	North Dakota..117	Ohio.....1,227	Oklahoma.....244	Oregon.....210	Pennsylvania.1,880	Rhode Island...127	South Carolina 220	South Dakota..105	Tennessee.....349	Texas.....702	Utah.....130	Vermont.....92	Virginia.....479	Washington....151	West Virginia...251	Wisconsin.....662	Wyoming.....11	U. S. Possessions, Philippines, etc. 149	Foreign.....286	Totals.....20,873	Marginal Number
1	..	..	2	..	..	..	..	..	4	..	14	1	..	1	1	..	1	..	1	..	2	5	..	..	1	..	..	..	..	..	3	102	1
2	..	..	..	5	..	1	..	..	1	..	4	..	..	1	5	..	1	..	..	..	..	2	..	..	..	..	3	..	..	..	..	158	2
3	15	15	..	1	2	6	6	..	2	3	9	1	4	6	4	12	8	..	..	4	10	7	2	..	..	14	..	6	1	9	57	240	3
4	..	..	..	..	1	..	1	..	..	..	..	..	1	1	..	4	1	..	..	..	..	..	2	..	..	1	..	..	..	3	2	183	4
5	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	221	5
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	54	6
7	1	..	..	5	..	1	..	..	1	1	5	2	..	..	..	1	..	..	..	..	..	3	1	..	..	1	..	..	1	2	3	192	7
8	2	1	..	2	1	1	..	2	15	1	42	2	..	3	..	1	9	4	..	..	..	1	..	1	2	..	..	1	..	6	..	207	8
9	2	2	..	..	1	..	..	3	76	..	117	2	..	10	..	..	93	16	1	..	..	..	..	1	8	1	3	..	..	4	8	473	9
10	1	1	..	2	1	..	..	22	1	..	72	5	1	7	2	..	23	3	..	..	..	4	4	..	12	..	1	..	..	18	..	290	10
11	..	..	5	2	..	1	..	..	11	..	8	14	..	6	1	..	11	..	18	..	2	6	..	..	22	..	3	..	..	1	49	234	11
12	..	..	7	1	..	..	..	..	..	..	1	11	..	1	..	..	1	..	5	..	3	2	..	..	2	..	5	..	..	..	1	191	12
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	135	13
14	18	5	..	2	2	2	..	..	5	..	31	..	1	23	1	1	15	1	..	1	..	2	..	..	2	2	12	..	10	8	461	14
15	26	18	3	8	5	10	2	..	3	1	3	..	14	11	6	2	1	..	..	14	1	6	16	..	..	19	3	36	1	7	4	502	15
16	17	1	..	6	3	2	..	1	3	1	9	1	2	14	1	2	9	1	..	5	..	8	1	..	..	1	..	4	..	3	8	238	16
17	12	8	..	9	3	4	1	..	4	..	9	4	13	11	1	..	8	1	..	8	2	6	6	1	2	1	10	29	..	3	7	348	17
18	1	1	5	1	2	..	..	..	..	..	..	..	2	..	..	..	1	..	..	5	1	1	4	..	..	1	2	8	..	1	3	509	18
19	1	..	..	..	..	..	..	..	..	..	4	..	..	3	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	2	..	417	19
20	1	4	..	3	..	1	..	..	9	1	12	1	..	..	1	..	..	..	..	2	..	..	..	..	..	2	1	..	..	2	3	483	20
21	..	1	..	30	..	..	..	..	..	..	3	..	..	2	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	1	3	223	21
22	3	1	4	8	1	..	..	..	3	1	21	6	1	33	1	1	5	1	..	..	3	7	6	..	..	2	11	3	..	1	2	322	22
23	2	1	48	4	..	..	..	..	3	..	22	26	1	..	4	..	..	..	1	1	6	44	..	..	..	..	1	..	..	6	6	438	23
24	9	2	2	1	1	..	..	2	12	..	44	14	1	7	2	1	25	3	4	2	1	8	1	2	12	2	2	6	..	5	283	24
25	..	..	..	..	..	..	..	2	43	..	83	22	..	8	..	..	43	3	1	..	..	1	..	..	3	2	23	..	..	5	1	412	25
26	2	..	..	..	1	..	..	9	10	..	27	..	..	1	..	..	5	17	..	..	..	..	..	2	..	1	..	..	..	..	5	214	26
27	7	5	..	10	4	3	2	4	19	1	54	11	1	23	1	4	24	16	..	3	1	8	10	3	4	11	5	22	..	1	9	515	27
28	2	..	..	..	1	..	..	9	11	..	35	..	..	3	..	..	3	21	..	..	..	..	..	3	..	..	..	..	..	2	10	493	28
29	427	2	..	4	2	1	..	..	19	1	28	1	..	70	1	4	23	..	..	1	..	3	..	..	..	4	1	5	..	3	5	664	29
30	235	..	..	1	..	..	..	..	..	..	..	..	..	8	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	250	30
31	3	414	..	1	9	1	..	..	..	..	1	..	15	1	..	..	1	..	..	7	..	2	..	..	..	4	..	10	1	1	1	484	31
32	..	..	57	..	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	63	32
33	..	..	..	67	..	..	..	..	..	1	6	..	..	..	..	..	1	1	..	..	..	1	..	..	..	..	..	..	..	1	..	80	33
34	10	8	..	125	8	1	1	..	15	..	58	1	2	89	1	4	38	5	..	1	3	9	1	..	..	6	2	4	..	7	7	536	34
35	..	1	..	128	2	..	..	..	4	..	11	9	2	6	2	3	1	..	..	2	4	5	1	..	1	9	..	3	..	7	4	300	35
36	..	5	1	..	10	67	..	..	..	..	4	..	1	2	..	4	3	..	..	11	..	..	3	..	..	6	..	..	1	..	..	200	36
37	1	6	..	2	..	262	..	..	..	..	..	..	2	..	1	..	..	..	..	5	..	1	1	..	..	1	..	1	4	3	1	312	37
38	..	..	..	1	..	..	..	1	3	..	10	..	..	..	..	1	1	1	..	..	..	..	..	1	..	..	..	..	..	..	1	39	38
39	..	..	..	..	..	..	..	..	1	..	109	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	122	39
40	1	..	..	..	..	..	..	..	1	..	254	..	..	4	..	..	10	..	..	..	..	..	..	..	..	..	..	..	..	..	2	279	40
41	1	1	5	..	..	..	..	1	61	..	261	2	..	2	..	..	11	..	4	..	1	4	4	1	..	2	..	3	..	7	4	420	41
42	..	1	..	..	..	..	1	2	29	..	168	2	..	7	..	..	7	4	..	..	1	..	..	..	..	2	..	1	..	..	3	259	42
43	..	..	..	..	..	..	..	..	23	..	390	2	..	1	..	..	8	1	..	..	..	..	..	..	..	..	2	..	..	2	1	440	43
44	..	..	..	..	..	..	..	..	19	..	293	..	..	4	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	1	327	44
45	..	1	..	..	..	..	..	1	59	..	331	4	..	2	..	..	9	2	..	..	..	..	..	..	..	..	3	..	..	..	1	477	45
46	..	..	..	..	1	..	1	..	1	..	60	..	..	12	..	..	10	..	..	..	..	..	..	..	..	..	..	..	..	..	5	109	46
47	..	..	..	..	..	..	..	..	12	..	146	4	..	2	..	..	4	2	..	..	..	1	1	1	..	..	..	..	..	3	4	181	47
48	..	..	..	..	..	..	..	..	..	..	..	72	..	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	76	48
49	..	..	..	..	..	..	..	..	..	..	..	51	..	..	..	..	1	..	1	..	..	..	..	..	1	..	..	..	..	..	..	54	49
50	..	4	..	..	..	..	..	..	..	..	..	..	48	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	57	50
51	..	..	1	..	..	..	..	..	1	..	1	..	..	16	..	..	5	..	..	..	1	..	..	..	..	1	1	..	..	..	..	35	51
52	4	..	..	..	..	..	..	..	3	3	..	214	1	..	..	2	..	..	..	..	..	..	..	..	..	..	3	1	..	..	..	269	52
53	1	..	..	..	..	2	2	..	..	..	4	..	..	189	..	..	24	..	..	..	1	..	..	..	2	..	2	2	1	1	1	243	53
54	..	..	..	..	..	..	..	..	..	..	2	..	..	322	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	328	54
55	..	..	..	1	..	..	..	..	..	..	..	..	..	..	185	..	1	1	..	..	..	1	..	..	..	..	1	..	..	..	1	192	55
56	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	161	..	..	..	..	..	..	1	..	..	41	..	..	..	1	2	229	56
57	4	1	..	..	..	1	..	..	69	..	29	..	..	13	..	..	268	6	..	..	1	1	..	..	1	..	..	1	..	1	4	430	57
58	1	1	5	5	2	2	..	2	35	..	12	31	1	29	..	1	337	11	7	..	5	6	2	..	3	2	9	..	..	6	6	585	58
59	..	..	..	..	..	..	..	..	18	..	6	3	..	4	..	..	185	..	..	..	..	..	..	..	..	..	..	..	..	..	..	220	59
60	1	1	3	5	..	1	1	1	33	..	18	41	..	14	..	..	245	..	2	..	10	5	13	1	11	6	5	8	..	..	6	489	60
61	2	2	..	..	..	2	..	1	5	..	23	3	..	3	..	..	32	..	..	..	2	1	..	..	2	2	1	..	..	2	2	98	61
62	..	..	..	..	..	..	..	..	..	..	1	..	..	3	..	..	255	..	..	..	..	..	..	..	..	1	..	..	..	1	..	261	62
63	..	..	..	..	..	..	..	..	..	..	1	3	..	..	..	..	..	..	147	..	..	..	..	..	..	..	..	..	..	..	..	153	63
64	..	4	..	1	..	1	..	..	..	..	4	..	..	..	..	..	2	..	..	32	..	..	..	..	..	..	..	..	..	1	..	52	64
65	..	..	32	7	..	..	..	..	1	..	9	6	..	3	10	..	..	..	1	..	216	13	..	..	3	1	2	..	..	..	..	378	65
66	8	..	11	5	..	..	..	1	8	..	13	16	..	10	1	..	8	..	13	..	7	29	..	..	8	..	5	1	..	..	8	216	66
67	2	2	..	..	..	1	..	1	5	..	23	3	..	3	..	..	3	1	5	1	52	9	..	..	4	..	..	1	..	..	3	181	67
68	..	..	1	1	..	..	..	..	..	3	2	..	1	1	6	1	..	..	..	..	1	311	..	..	..	..	..	..	..	1	4	356	68
69	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	275	..	..	..	..	..	..	..	..	..	275	69
70	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	49	..	..	..	..	..	1	..	2	55	70
71	..	..	..	..	..	..	..	5	6	..	22	..	..	..	..	..	..	2	..	..	..	..	..	75	..	..	..	..	..	1	1	140	71
72	..	..	..	..	..	..	..	..	4	..	6	74	..	2	..	..	10	1	4	..	3	1	..	..	231	1	46	..	..	1	2	371	72
73	1	..	4	..	..	..	..	..	8	..	9	7	1	..	..	..	2	..	4	..	7	1	..	..	173	..	10	..	..	..	3	243	73
74	..	..	..	..	..	..	..	..	..	..	3	..	..	9	..	..	11	..	..	..	..	..	..	..	..	..	83	..	..	6	..	113	74
75	4	6	..	1	1	1	..	2	..	..	3	..	..	2	..	1	1	..	..	..	..	..	1	..	..	..	..	257	..	..	1	294	75
76	14	10	..	2	2	..	..	..	..	..	8	..	2	5	2	..	4	2	..	..	..	..	..	..	..	..	..	236	..	1	1	305	76
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51		

ated from the one medical college for women, while 827 (87.2 per cent) were matriculated in and 196 (91.1 per cent) graduated from the coeducational colleges.

medical schools. Largely through the merging of two or more schools into one, in each of a score or more of cities, the number has gradually decreased until in

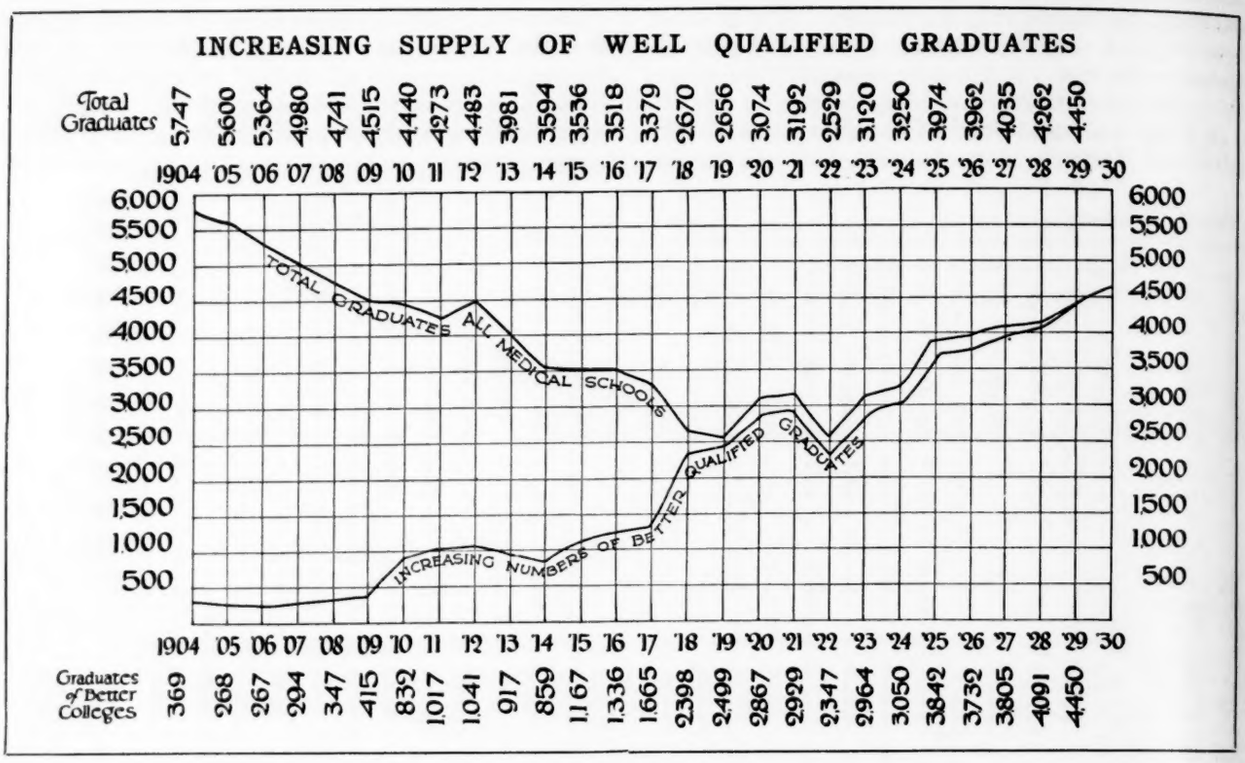
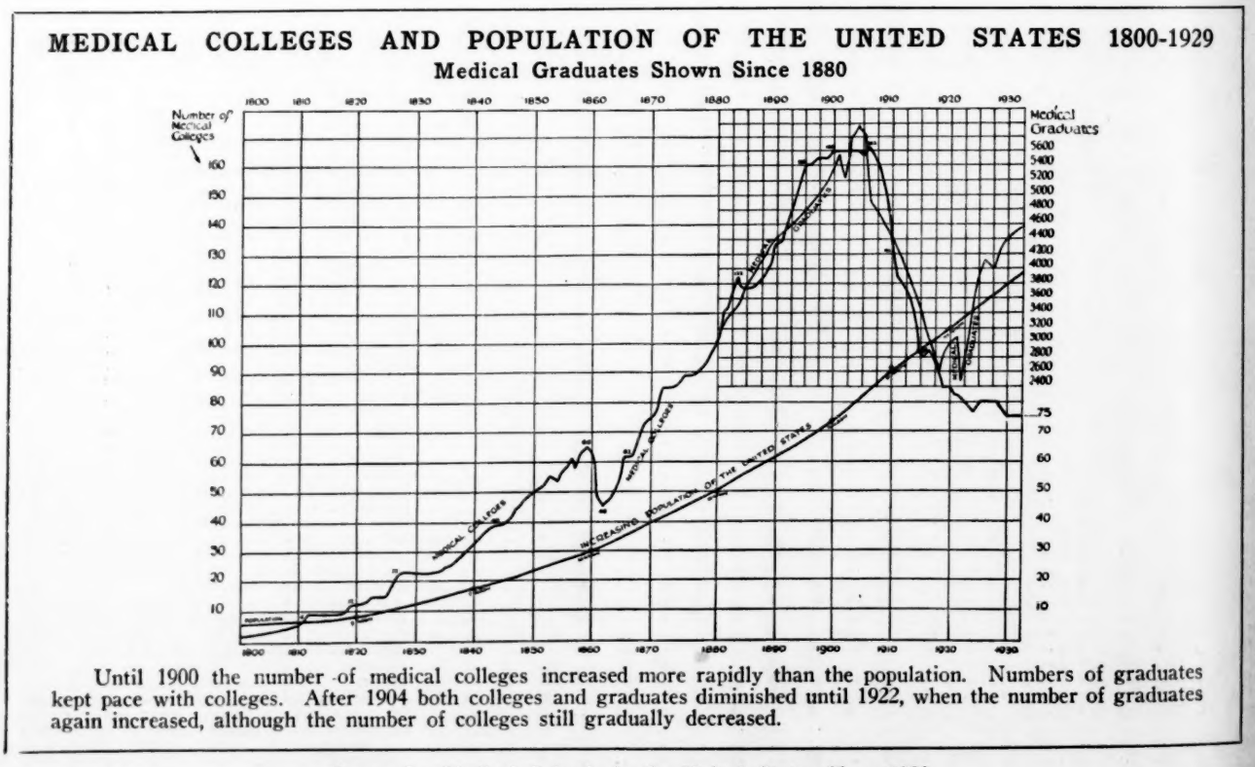


CHART 1.—*Well Qualified Graduates on Increase*


MEDICAL COLLEGES AND POPULATION OF THE UNITED STATES 1800-1929
Medical Graduates Shown Since 1880
Number of Medical Colleges
Medical Graduates
INCREASING POPULATION OF THE UNITED STATES

Until 1900 the number of medical colleges increased more rapidly than the population. Numbers of graduates kept pace with colleges. After 1904 both colleges and graduates diminished until 1922, when the number of graduates again increased, although the number of colleges still gradually decreased.

CHART 2.—*Medical Schools in the United States Since 1800*

NUMBER OF COLLEGES

The number of medical colleges in each decade since 1850 and in certain special years is shown in table 9. The largest number was in 1906, when there were 162

1924 only seventy-nine medical schools remained. With the opening of the new medical school of the University of Rochester, N. Y., in 1925, the number was restored to eighty.

INSTITUTIONS NOT RECOGNIZED AS MEDICAL SCHOOLS

In 1926 and 1927, respectively, the Kansas City College of Medicine and Surgery and the St. Louis College of Physicians and Surgeons had their charters revoked since they were convicted of being engaged in the sale of diplomas. Through the lack of safeguards over the chartering of educational institutions, two other institutions were promptly chartered, evidently as successors to the two just closed. Inasmuch as these institutions were conducted in the same buildings and evidently by the same group of individuals as their outlawed predecessors, they were considered no more worthy of recognition. Four other institutions, according to official reports, for several years had been refused recognition by the licensing boards in forty-six states and the territory of Alaska. In December, 1928, therefore, the Council on Medical Education and Hospitals decided no longer to recognize them or to include them among recognized medical schools. The number of recognized medical schools, therefore, was reduced to seventy-four. This year the Eclectic Medical College of Cincinnati has suspended operation, but two other medical schools have been organized, one at the University of Southern California and another by the University of Chicago. This gives at present a list of seventy-five recognized medical schools. The medical school of the University of Southern California is still undergoing organization and thus far has not been given a definite rating. In the fall of 1930 it is announced that the new medical school of Duke University will be opened.

TABLE 3.—*Medical Students Shown by Classes*

Name of College	Enrolled During 1928-29 1st Yr.	2d Yr.	3d Yr.	4th Yr.	Totals
University of Alabama School of Medicine*.	60	42	..	..	102
University of Arkansas School of Medicine..	53	32	29	44	158
College of Medical Evangelists #.....	99	92	80	69	340
Stanford University School of Medicine#.....	48	43	49	43	183
University of California Medical School #....	59	56	60	46	221
University of Southern California School of Medicine †	54	..	..	..	54
University of Colorado School of Medicine..	63	42	46	41	192
Yale University School of Medicine.....	52	59	53	43	207
Georgetown University School of Medicine..	156	130	113	74	473
George Washington University Med. School.	90	84	55	61	290
Howard University School of Medicine.....	61	62	68	43	234
Emory University School of Medicine.....	64	40	46	41	191
University of Georgia Medical Department..	42	27	31	35	135
Loyola University School of Medicine #.....	146	121	92	102	461
Northwestern University Medical School #....	129	103	140	130	502
University of Chicago School of Medicine...	119‡	119‡	..	..	238
University of Chicago, Rush Medical College#	...	...	133	215	348
University of Illinois College of Medicine #..	142	115	119	133	509
Indiana University School of Medicine.....	102	110	104	101	417
State University of Iowa College of Med...	166	115	115	87	483
University of Kansas School of Medicine....	76	54	50	43	223
University of Louisville School of Medicine.	90	74	90	68	322
Tulane Univ. of Louisiana School of Med...	129	98	107	104	438
Johns Hopkins University School of Med....	72	75	70	66	283
University of Maryland School of Medicine and College of Physicians and Surgeons..	136	86	89	101	412
Boston University School of Medicine.....	68	49	48	49	214
Harvard University Medical School.....	125	118	137	135	515
Tufts College Medical School.....	135	126	118	114	493
University of Michigan Medical School.....	159	176	169	160	664
Detroit College of Medicine and Surgery #....	69	86	52	43	250
University of Minnesota Medical School #...	132	151	93	108	484
University of Mississipi School of Medicine*.	36	27	..	..	63
University of Missouri School of Medicine*..	40	40	..	..	80
St. Louis University School of Medicine.....	182	120	123	111	536
Washington University School of Medicine..	83	61	80	76	300
Creighton University School of Medicine....	55	46	49	50	200
University of Nebraska College of Medicine.	100	70	68	74	312
Dartmouth Medical School*.....	20	19	..	..	39
Albany Medical College.....	41	35	22	24	122
University of Buffalo School of Medicine....	77	69	68	65	279
Columbia University College of Physicians and Surgeons	110	103	104	103	420
Cornell University Medical College.....	69	70	57	63	259
Long Island College Hospital.....	122	108	107	103	440
New York Homeopathic Medical College and Flower Hospital	102	89	86	50	327
University and Bellevue Hospital Med. Coll.	122	122	128	105	477
University of Rochester School of Medicine..	36	31	24	18	109
Syracuse University College of Medicine.....	52	42	46	41	181
Univ. of North Carolina School of Med.*....	42	34	..	..	76
Wake Forest College School of Medicine*....	28	26	..	..	54
Univ. of North Dakota School of Medicine*.	31	26	..	..	57
Eclectic Medical College, Cincinnati.....	..	..	..	35	35
University of Cincinnati College of Medicine#	78	63	61	67	269
Western Reserve University School of Med..	71	60	60	52	243
Ohio State University College of Medicine...	100	92	60	76	328
University of Oklahoma School of Medicine.	68	39	47	38	192
University of Oregon Medical School.....	66	63	42	58	229
Hahnemann Medical College and Hospital of Philadelphia	178	108	80	64	430
Jefferson Medical College of Philadelphia...	170	131	142	142	585
Temple University School of Medicine.....	64	54	53	49	220
University of Pennsylvania School of Med..	112	110	132	135	489
Woman's Medical College of Pennsylvania..	37	28	15	18	98
University of Pittsburgh School of Medicine	67	67	61	66	261
Medical College of the State of S. Carolina..	42	42	41	28	153
University of South Dakota School of Med.*	29	23	..	..	52
University of Tennessee College of Medicine..	126	87	93	72	378
Meharry Medical College.....	67	57	44	48	216
Vanderbilt University School of Medicine....	50	41	49	41	181
Baylor University College of Medicine.....	115	91	88	62	356
University of Texas School of Medicine.....	105	80	43	47	275
University of Utah School of Medicine*.....	29	26	..	..	55
University of Vermont College of Medicine..	32	31	47	30	140
Medical College of Virginia.....	96	85	100	90	371
University of Virginia Dept. of Medicine....	70	57	63	53	243
West Virginia University School of Medicine*	66	47	..	..	113
University of Wisconsin Medical School.....	116	97	41	40	294
Marquette University School of Medicine #...	79§	102	66	58	305
Totals for 1929.....	6,277	5,304	4,746	4,551	20,878
Totals for 1928.....	6,199	5,190	4,646	4,510	20,545
Totals for 1927.....	6,009	4,993	4,510	4,150	19,662

* Gives only the first two years of the medical course.
† Work of first two years will be offered in 1929-1930; eventually a full medical course.
‡ Enrolment not given by years; half of total enrolment arbitrarily taken.
§ Includes two irregular students.
# Intern year required; see table 4 for fifth year registration.

TABLE 4.—*1928-1929 Fifth Year Students in Medical Colleges Requiring the Hospital Intern Year for the M.D. Degree*

College of Medical Evangelists.....	65
Stanford University School of Medicine.....	48
University of California Medical School.....	42
Loyola University School of Medicine.....	90
Northwestern University Medical School.....	121
University of Chicago, Rush Medical College.....	146
University of Illinois College of Medicine.....	114
Detroit College of Medicine and Surgery.....	47
University of Minnesota Medical School.....	170
University of Cincinnati College of Medicine.....	60
Marquette University School of Medicine.....	58
Total.....	967

TABLE 5.—*Medical College Attendance*

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1880.....	9,776	1,220	830	...	...	11,826
1890.....	13,521	1,164	719	...	...	15,404
1900.....	22,710	1,909	522	...	...	25,171
1904.....	23,662	1,309	1,014	123	234	28,142
1910.....	20,136	867	455	49	19	21,526
1915.....	13,914	736	241	...	...	14,891
1919.....	12,137	397	86	...	310	12,930
1920.....	12,960	386	93	...	389	13,798
1925.....	17,652	410	148	...	...	18,200
1926.....	18,092	458	253	...	37	18,840
1927.....	18,835	589	248	...	40	19,662
1928.....	19,646	640	219	...	40	20,545
1929.....	20,086	757	35	...	..	20,878

TABLE 6.—*Medical College Graduates*

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1880.....	2,673	380	188	..	..	3,241
1890.....	3,853	380	221	..	..	4,454
1900.....	4,715	413	86	..	..	5,214
1904.....	5,190	371	146	20	20	5,747
1910.....	4,113	183	114	16	14	4,440
1915.....	3,286	195	55	..	..	3,536
1920.....	2,826	97	30	..	94	3,047
1922.....	2,358	64	34	..	73	2,529
1925.....	3,856	80	38	..	..	3,974
1926.....	3,801	80	64	..	17	3,962
1927.....	3,864	90	67	..	14	4,035
1928.....	4,070	123	55	..	14	4,232
1929.....	4,299	113	34	..	..	4,446

COLLEGES, STUDENTS AND GRADUATES BY STATES

As shown in table 10, New York now has nine medical colleges—the largest number—followed by Pennsylvania with six and Illinois with five.

New York has the largest number of students enrolled in its medical schools, 2,614, followed by Pennsylvania with 2,083, Illinois with 2,058, and Massachusetts with 1,222. New York leads also in the number of graduates, having reported 572, followed by Illinois with 475, Pennsylvania with 471, Massachusetts with 299, Ohio with 231 and Michigan with 205.

QUALIFICATIONS OF STUDENTS AND GRADUATES

Table 11 shows, for each year specified, the students and graduates of medical schools deemed worthy of recognition by the Council on Medical Education and Hospitals. During the last sixteen years the number of students enrolled in class A colleges has increased from 11,122 to 20,516. Of graduates, also, the percentage in class A colleges has increased, while it has decreased in class B. Such reductions as there have been in the total numbers of students and graduates, therefore, have been at the expense of the lower grade colleges.

TABLE 8.—*Medical Graduates with Liberal Arts Degrees**

Year	Nonsectarian			Homeopathic			Eclectic			Totals		
	Graduates	A.B., B.S.	Per Cent	Graduates	A.B., B.S.	Per Cent	Graduates	A.B., B.S.	Per Cent	Graduates	A.B., B.S.	Per Cent
1910	4,113	664	16.1	183	13	7.1	114	3	2.6	4,440	680	15.3
1915	3,286	839	25.5	195	16	8.2	55	3	5.5	3,536	858	24.3
1920	2,826	1,307	46.2	97	11	11.3	30	3	10.0	3,043	1,321	43.5
1921	2,969	1,447	48.2	115	33	28.7	30	..	...	3,192	1,466	46.0
1922	2,358	1,446	61.1	64	13	20.3	34	2	5.9	2,529	1,455	57.5
1923	2,984	1,770	59.3	49	13	26.5	16	3	18.7	3,120	1,787	57.3
1924	3,395	1,991	58.6	74	27	33.5	27	2	7.4	3,562	2,020	56.7
1925	3,856	2,408	62.4	80	21	26.2	38	2	5.3	3,974	2,431	61.2
1926	3,801	2,365	62.2	80	16	20.0	64	7	10.9	3,962	2,388	60.3
1927	3,864	2,442	63.2	90	40	44.4	67	4	6.0	4,035	2,486	61.5
1928	4,070	2,653	65.1	123	43	35.0	55	12	21.9	4,262	2,708	63.5
1929	4,299	2,894	67.3	113	48	42.5	34	9	23.4	4,446	2,951	66.4

* Figures for nondescript colleges not included.

TUITION AND OTHER FEES

In table 1, pages 526 and 527, are given the amounts charged by the various medical colleges per annum for

TABLE 7.—*Higher Degrees Other Than Medical; Percentages of 1929 Graduates Obtaining Baccalaureate Degrees Prior to, and During the Medical Course*

Medical School	Total Graduates	Having No Degree		Total College Degrees		When Arts Degrees Were Obtained, Numbers and Percentages									
						4th Year		3d Year		2d Year		1st Year		Prior	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Temple University	48	41	85.4	7	14.6	..	....	..	....	..	....	..	....	7	14.6
Medical College of Virginia	90	73	81.1	17	18.9	..	....	..	....	..	....	..	....	17	18.9
Hahnemann Medical College of Philadelphia	63	51	80.9	12	19.1	..	....	..	....	1	1.6	..	....	11	17.5
University of Georgia	35	27	77.2	8	22.8	..	....	..	....	..	....	..	....	8	22.8
University of Vermont	30	23	76.7	7	23.3	..	....	..	....	..	....	..	....	7	23.3
University of Buffalo	63	48	76.2	15	23.8	..	....	..	....	1	1.6	1	1.6	13	20.6
Eclectic Medical College	34	25	73.5	9	26.5	..	....	..	....	3	8.8	1	3.0	5	14.7
New York Homeopathic Medical College	50	36	72.0	14	28.0	..	....	..	....	..	....	1	2.0	13	26.0
University of Virginia	53	38	71.7	15	28.3	2	3.8	..	....	..	....	1	1.9	12	22.6
Tufts College Medical School	113	80	70.8	33	29.2	..	....	..	....	..	....	1	0.9	32	28.3
Detroit College of Medicine and Surgery	47	33	70.2	14	29.8	..	....	..	....	..	....	..	....	14	29.8
University of Colorado	40	26	65.0	14	35.0	..	....	..	....	1	2.5	1	2.5	12	30.0
University of Tennessee	72	46	63.9	26	36.1	..	....	..	....	14	19.4	1	1.4	11	15.3
Ohio State University	79	48	60.8	31	39.2	6	7.6	1	1.3	6	7.6	..	....	18	22.7
Baylor University	62	35	56.5	27	43.5	12	19.4	..	....	1	1.6	1	1.6	13	20.9
Long Island College Hospital	103	58	56.3	45	43.7	..	....	1	1.0	5	4.9	13	12.6	26	25.2
St. Louis University	109	60	55.1	49	44.9	..	....	..	....	21	19.3	5	4.6	23	21.1
Medical College of South Carolina	26	14	54.0	12	46.0	..	....	..	....	..	....	..	....	12	46.0
Jefferson Medical College	142	70	49.3	72	50.7	..	....	..	....	10	7.0	3	2.1	59	41.6
George Washington University	61	31	50.8	30	49.2	..	....	..	....	1	1.7	16	26.2	13	21.3
University of Louisville	68	34	50.0	34	50.0	2	3.0	..	....	12	17.6	3	4.4	17	25.0
Syracuse University	40	20	50.0	20	50.0	..	....	..	....	1	2.5	8	20.0	11	27.5
Georgetown University	75	34	45.3	41	54.7	..	....	8	10.7	22	29.3	2	2.7	9	12.0
Emory University	40	18	45.0	22	55.0	..	....	1	2.5	5	12.5	6	15.0	10	25.0
University of Nebraska	76	34	44.7	42	55.3	8	10.5	6	8.0	22	28.9	5	6.6	1	1.3
University of Maryland	103	45	43.6	58	56.3	..	....	..	....	11	10.7	8	7.8	39	37.8
Albany Medical College	24	10	41.8	14	58.2	..	....	..	....	..	....	..	....	14	58.2
Tulane University	103	44	42.7	59	57.3	..	....	..	....	36	35.0	6	5.8	17	16.5
University of Arkansas	43	17	39.5	26	60.5	2	4.6	7	16.5	1	2.3	1	2.3	15	34.8
Boston University School of Medicine	49	17	34.7	32	65.3	..	....	..	....	4	8.2	1	2.0	27	55.1
Howard University	44	15	34.1	29	65.9	..	....	..	....	..	....	6	13.6	23	52.3
Washington University	74	29	39.2	45	60.8	1	1.4	..	....	14	18.9	6	8.1	24	32.4
State University of Iowa	85	31	36.5	54	63.5	10	11.8	2	2.4	28	32.9	2	2.3	12	14.1
Northwestern University	121	41	33.9	80	66.1	*	....	16	13.2	8	6.6	18	14.9	13	10.7
University of Texas	51	17	33.3	34	66.7	6	11.8	1	2.0	2	3.9	6	11.7	19	37.3
Marquette University	54	18	33.3	36	66.7	28	77.8	..	....	..	....	..	....	8	22.2
University of Michigan	158	50	31.6	108	68.3	1	0.6	11	7.0	19	12.0	27	17.1	50	31.6
College of Medical Evangelists	65	18	27.7	47	72.3	..	....	34	52.3	..	....	..	....	13	20.0
University of Illinois	125	30	24.0	95	76.0	3	2.4	10	8.0	70	56.0	2	1.6	10	8.0
Meharry Medical College	48	11	22.9	37	77.1	..	....	..	....	..	....	..	....	37	77.1
University of Kansas	43	9	20.9	34	79.1	..	....	2	4.7	11	25.6	4	9.3	17	39.5
University of Cincinnati	67	13	19.4	54	80.6	..	....	2	3.0	26	38.8	6	9.0	20	29.8
University of Rochester	18	3	16.7	15	83.3	..	....	..	....	..	....	4	2.2	11	61.1
Woman's Medical College of Pennsylvania	18	3	16.6	15	83.4	..	....	..	....	1	5.6	..	....	14	77.8
Creighton University	50	6	12.0	44	88.0	..	....	3	6.0	34	68.0	2	4.0	5	10.0
University of Pittsburgh	66	7	10.6	59	89.4	4	6.1	6	9.1	15	22.7	19	28.8	15	22.7
University of Oklahoma	38	4	10.5	34	89.5	1	2.6	2	5.3	23	60.6	1	2.6	7	18.4
University of Minnesota	119	11	9.2	108	90.8	10	8.4	16	13.5	53	44.5	7	5.9	22	18.5
University and Bellevue Hospital Medical College	104	8	7.7	96	92.3	..	....	..	....	3	2.9	39	37.5	54	51.9
Harvard University	137	9	6.6	128	93.4	..	....	..	....	5	3.7	10	7.3	113	82.4
Loyola University	80	5	6.3	75	93.7	1†	1.2	6	7.5	57	71.3	3	3.8	7	8.7
Columbia University College of Phys. and Surgs.	107	7	5.6	100	94.4	..	....	..	....	2	1.9	22	20.5	76	71.0
Indiana University	100	4	4.0	96	96.0	2	2.0	6	6.0	59	59.0	10	10.0	19	19.0
University of Pennsylvania	134	5	3.7	129	96.3	1	0.8	..	....	13	9.7	46	34.3	69	51.5
University of California	40	1	2.5	39	97.5	..	....	..	....	..	....	24	60.0	15	37.5
Vanderbilt University	43	1	2.3	42	97.7	..	....	..	....	3	7.0	12	28.0	27	62.7
University of Wisconsin	44	1	2.3	43	97.7	1	2.3	4	9.1	20	47.7	13	29.5	4	9.1
Rush Medical College	149	2	1.3	147	98.7	..	....	1	0.7	19	12.7	58	38.9	69	46.4
Stanford University	48	0	0.0	48	100.0	..	....	..	....	1	2.1	35	72.9	12	25.0
Yale University	39	0	0.0	39	100.0	..	....	..	....	..	....	13	33.3	26	66.7
Johns Hopkins University	66	0	0.0	66	100.0	..	....	..	....	3	4.6	47	71.2	16	24.2
Cornell University	63	0	0.0	63	100.0	..	....	..	....	..	....	18	28.6	45	71.4
Western Reserve University	51	0	0.0	51	100.0	..	....	..	....	..	....	16	31.4	35	68.6
University of Oregon	56	0	0.0	56	100.0	1	1.8	3	5.4	7	12.5	24	42.8	21	37.5
	4,446	1,495	33.6	2,951	66.4	102	2.3	149	3.3	674	15.2	585	13.1	1,414	31.8

* 25 degrees, 20.7 per cent in fifth year } total, 26 degrees, or 0.7 per cent.
† 1 degree, 1.2 per cent in fifth year }

tuition, matriculation, laboratory and graduation fees for each student. In table 12, the seventy-five colleges have been grouped according to the amount of fees charged. Nine colleges charge fees of less than $150 a year; twenty charge from $150 to $250; nineteen from $250 to $350; thirteen charge from $350 to $400;

TABLE 9.—*Medical Colleges*

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1850	44	3	4	1	..	52
1860	53	6	4	2	..	65
1870	60	8	5	2	..	75
1880	76	14	8	2	..	100
1890	106	16	9	2	..	133
1900	126	22	9	2	1	160
1906	130	19	8	3	2	162
1910	109	12	8	1	1	131
1920	76	5	1	..	3	85
1924	73	2	1	..	3	79
1925	74	2	1	..	3	80
1926	74	2	2	..	1	79
1927	74	2	3	..	1	80
1928	74	2	3	..	1	80
1929	73	2	1	..	..	76

seven colleges charge between $400 and $500; six charge between $500 and $600, and one charges more than $600. The average fee per student in all colleges is $292. The nine colleges charging less than $150 are all schools of medicine of state universities, the fees referred to being for residents of those states. It is customary for state university medical schools to

TABLE 10.—*Medical Colleges, Students and Graduates by States*

State	Colleges Class A	Colleges Class B	Students Men	Students Women	Graduates Men	Graduates Women	Grads. with A.B. or B.S.
Alabama	1	..	102	..	...	...	...
Arkansas	1	..	158	..	43	...	26
California	4	..	723	75	128	26	134
Colorado	1	..	181	11	39	1	14
Connecticut	1	..	190	17	36	3	39
District of Columbia	3	..	977	20	176	4	100
Georgia	2	..	321	5	74	1	30
Illinois	5	..	1,955	103	457	18	397
Indiana	1	..	403	14	94	6	96
Iowa	1	..	458	25	81	4	54
Kansas	1	..	210	13	37	6	34
Kentucky	1	..	318	4	67	1	34
Louisiana	1	..	424	14	101	2	59
Maryland	2	..	646	49	159	10	124
Massachusetts	3	..	1,174	48	285	14	193
Michigan	2	..	880	34	197	8	122
Minnesota	1	..	461	23	111	8	108
Mississippi	1	..	62	1	...	...	...
Missouri	3	..	907	9	181	2	94
Nebraska	2	..	506	6	125	1	86
New Hampshire	1	..	39	...	...	...	...
New York	8	1	2,474	140	534	38	382
North Carolina	2	..	124	6	...	...	...
North Dakota	1	..	55	2	...	...	...
Ohio	3	1	830	45	220	11	145
Oklahoma	1	..	189	3	38	...	34
Oregon	1	..	215	14	53	3	56
Pennsylvania	6	..	1,954	129	444	27	294
South Carolina	1	..	146	7	23	3	12
South Dakota	1	..	52	...	...	...	...
Tennessee	3	..	752	23	160	3	105
Texas	2	..	605	26	107	6	61
Utah	1	..	54	1	...	...	...
Vermont	1	..	131	9	29	1	7
Virginia	2	..	602	12	141	2	32
West Virginia	1	..	109	4	...	...	...
Wisconsin	2	..	566	33	91	7	79
Totals	74	2	19,953	925	4,232	214	2,951
Grand total			20,878		4,446		

charge higher fees for students coming from other states. These charges are shown in a footnote to table 1.

COLLEGE FEES DURING NINETEEN YEARS

Tuition fees in medical schools have been gradually increased during the last nineteen years. From 1910 to 1915, the majority of medical schools were charging fees of $150 or less. From 1916 to 1922 the majority were charging fees above $150, while since 1920 the majority have included several medical schools charging more than $300. The percentage of medical schools charging more than $300 increased from 4.7 in 1920 to 52 per cent in 1929. Now, forty-six (61.3 per cent of all colleges) are charging fees over $250 per student, and seven (9.3 per cent), are charging over $500. The average fees charged per student by all colleges in 1910 was $118; in 1915 it had increased to $145; in 1920, to $180; in 1925, to $250, and in 1929, to $292.

In 1910 several medical schools were still paying all expenses—and a few were making profits—from students' fees. At present, however, no medical college can maintain the extensive laboratories, pay the essential instructors and properly teach modern medicine

TABLE 11.—*Students and Graduates According to Classification*

Year	Students: Colleges Rated in Class A	%	B	%	C	%	Graduates: Colleges Rated in Class A	%	B	%	C	%
1913	11,122	65.4	4,158	24.4	1,735	10.2	2,539	63.8	1,050	26.4	392	9.8
1915	11,314	76.0	2,668	17.9	909	6.1	2,629	74.4	688	19.4	219	6.2
1920	12,320	89.2	680	4.8	798	6.0	2,690	88.4	152	5.0	205	6.6
1925	17,497	96.2	554	3.0	149	0.8	3,852	96.2	118	3.0	4	0.8
1926	17,887	95.0	582	3.0	371	2.0	3,732	91.2	130	3.3	100	2.5
1927	18,754	95.4	564	2.9	344	1.7	3,798	94.1	117	2.9	120	3.0
1928	19,794	96.3	371	1.8	380	1.9	4,091	96.0	96	2.2	75	1.8
1929	20,516	98.2	362	1.8	...	...	4,362	98.1	84	1.9	..	...

without having an income much larger than that received alone from students' fees.

As the cost of conducting medical schools has increased, there has also been an increase—and properly so—in the fees charged for tuition. A large provision has been made for scholarships and loan funds for the benefit of deserving students who are financially poor.

TABLE 12.—*College Fees, 1929-1930* *

	Colleges	Per Cent		Colleges	Per Cent
$50 to 99	3	4.0	$300 to 349	12	16.0
100 to 149	6	8.0	350 to 399	13	17.3
150 to 199	11	14.7	400 to 499	7	9.3
200 to 249	9	12.0	500 to 599	6	8.0
250 to 299	7	9.3	600 to 699	1	1.4
Totals †				75	100.0

* Based upon fees charged resident students.
† Average fee per student in all colleges, $292.

With such means of financial aid the deserving student can use his entire time in obtaining valuable experience in examining more patients while under teachers who are also skilled clinicians.

MEDICAL STUDENTS WHO DO NOT GO ON TO GRADUATION

Since the beginning of the students' register in 1907, the biographic cards of students who dropped out of college before graduation have been kept in a separate file. From these cards a table has been prepared covering the nineteen years between 1907 and 1926 inclusive, showing the numbers of students who have dropped out of school each year during or at the end of the first, second, third or fourth classes. This tabulation is an improvement over the table published a year ago. The results of this investigation are in table 13.

During the nineteen years, within which sixteen classes went through the four year course, of the 67,198 individual students enrolled, 11,722 did not go on to graduation, while 55,476, or 82.5 per cent, graduated. Of the students who did not graduate, 65.6 per cent dropped out in the first year, and 22.6, 9.0 and 2.8 per cent, respectively, dropped out in the second, third and fourth years. In other words, about 90 per cent of all students who failed to graduate dropped out in the first two years of the medical course. This is as it should be. If, for poor scholarship or other reasons, students are not qualified for the practice of medicine, they should be notified in the earlier years so their time may not be wasted by vain attempts in the higher classes, only to be dropped after they have come so much closer to graduation. This not only adds extremely to their disappointment but also prevents them from making a better use of their time in some other calling.

TABLE 13.—*Medical Students Who Do Not Graduate* *

Year	Medical Students Dropping Out					Number Graduating
	1st Year	2d Year	3d Year	4th Year	Total	
1907-08	350	...	...	...	350	.....
1908-09	371	149	...	...	520	.....
1909-10	873	291	218	...	1,382	.....
1910-11	710	388	153	9	1,260	4,273
1911-12	704	227	129	48	1,108	4,483
1912-13	664	217	91	37	1,009	3,981
1913-14	658	197	68	33	956	3,594
1914-15	359	147	52	25	583	3,536
1915-16	345	129	55	29	558	3,518
1916-17	344	92	36	17	489	3,379
1917-18	342	77	30	19	468	2,670
1918-19	321	99	30	10	460	2,656
1919-20	362	126	34	25	547	3,047
1920-21	377	101	26	6	510	3,192
1921-22	455	119	25	19	618	2,529
1922-23	453	137	29	13	632	3,120
1923-24	...	151	53	15	219	3,562
1924-25	...	...	30	13	43	3,974
1925-26	...	...	...	10	10	3,932
Total	7,083	2,647	1,059	328	11,722	55,476
Per cent of all students leaving before graduation	65.6	22.6	9.0	2.8	100.0	

* Total number of students registered, 67,198.

In table 14 is shown the average age of the students graduating this year from each of the medical schools named. The averages followed by an asterisk (*) are reduced one year because a fifth year of internship was required before the M.D. degree was granted, and by so doing the average age for all the graduates is reduced to the basis of four years in medicine. If it is desired to include the internship in the calculation, an additional year should be added.

At first thought, the medical schools requiring a college degree for admission would be expected to show the highest average age for their graduates. From a study of the medical schools having the highest ages, it evidently was not due to the length of the medical course but to difficulties and delays the students had in securing the essential premedical training. It is not surprising, therefore, that the highest age averages are found at Howard University School of Medicine and Meharry Medical College, the two schools for negro students who undoubtedly secure their education under greater handicaps. The age at which 865 students (the largest number) graduated was 25 years, as shown in table 15, or 26 years including the internship.

Since the foregoing figures are based on a study of the biographic cards of the students who have dropped out of medical schools, the figures are accurate and reliable.

AVERAGE AGE, GRADUATES OF 1929

TABLE 14.—*Average Ages of 1929 Graduates*

College	No. of Graduates	Average Age
University of Arkansas School of Medicine	43	27.7
College of Medical Evangelists	65	27.7*
Stanford University School of Medicine	48	28.1*
University of California Medical School	40	27.7*
University of Colorado School of Medicine	40	25.9
Yale University School of Medicine	39	25.9
Georgetown University School of Medicine	75	23.7
George Washington University Medical School	61	26.3
Howard University School of Medicine	44	28.4
Emory University School of Medicine	40	23.2
University of Georgia Medical Department	35	23.3
Loyola University School of Medicine	80	26.8*
Northwestern University Medical School	121	26.6*
University of Chicago, Rush Medical College	149	27.6*
University of Illinois College of Medicine	125	26.0*
Indiana University School of Medicine	100	27.0
State University of Iowa College of Medicine	85	25.9
University of Kansas School of Medicine	43	28.4
University of Louisville School of Medicine	68	26.7
Tulane University of Louisiana School of Medicine	103	25.5
Johns Hopkins University School of Medicine	66	26.6
University of Maryland School of Medicine and College of Physicians and Surgeons	103	25.9
Boston University School of Medicine	49	27.4
Harvard University Medical School	137	26.3
Tufts College Medical School	113	25.9
Detroit College of Medicine and Surgery	47	27.8*
University of Michigan Medical School	158	26.6
University of Minnesota Medical School	119	26.6*
St. Louis University School of Medicine	109	26.5
Washington University School of Medicine	74	25.9
Creighton University School of Medicine	50	26.1
University of Nebraska College of Medicine	76	26.8
Albany Medical College	24	28.4
Columbia University College of Phys. and Surgs	107	26.6
Cornell University Medical College	63	23.2
Long Island College Hospital	103	24.7
New York Homeo. Medical College and Flower Hosp.	50	25.9
Syracuse University College of Medicine	40	26.1
University and Bellevue Hospital Medical College	104	25.8
University of Buffalo School of Medicine	63	25.8
University of Rochester School of Medicine	18	26.9
Eclectic Medical College	34	27.2
Ohio State University College of Medicine	79	27.3
University of Cincinnati College of Medicine	67	26.0*
Western Reserve University School of Medicine	51	26.6
University of Oklahoma School of Medicine	38	27.2
University of Oregon Medical School	56	27.5
Hahnemann Med. College and Hosp. of Philadelphia	63	26.4
Jefferson Medical College of Philadelphia	142	26.2
Temple University School of Medicine	48	26.2
University of Pennsylvania School of Medicine	134	26.2
University of Pittsburgh School of Medicine	66	23.3
Woman's Medical College of Pennsylvania	18	28.4
Medical College of the State of South Carolina	26	23.2
Meharry Medical College	48	29.3
University of Tennessee College of Medicine	72	26.1
Vanderbilt University School of Medicine	43	23.3
Baylor University College of Medicine	62	26.6
University of Texas School of Medicine	51	25.8
University of Vermont College of Medicine	30	27.6
Medical College of Virginia	90	26.9
University of Virginia Department of Medicine	53	26.0
Marquette University School of Medicine	54	23.8*
University of Wisconsin Medical School	44	26.6
Total number of graduates	4,446	26.3

* The average age of these colleges has been reduced one year since they require an intern year before degrees are granted.

TABLE 15.—*Ages of Graduates of 1929*

Age	Graduates	Age	Graduates
21	9	35	32
22	64	36	20
23	297	37	22
24	712	38	10
25	865	39	13
26	816	40	10
27	542	41	5
28	310	42	4
29	251	43	..
30	146	44	1
31	130	45	1
32	79	46	2
33	62	53	1
34	42		
Total			4,446

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine and which, after careful investigation, have been deemed worthy of being recognized as such by the Council on Medical Education and Hospitals of the American Medical Association. Of these ten do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination. Figures for graduates include all who graduated since July 1, 1928. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of college work. Thirteen states, Alaska (Ter.), Delaware, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island, South Dakota, Utah, Washington and Wisconsin, require also a year's hospital internship as an essential qualification for a license.

ALABAMA

In order to secure licenses to practice medicine in Alabama, students must complete two years of work in an approved college of liberal arts prior to entering on the study of medicine.

Tuscaloosa

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, University Campus, Tuscaloosa.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus at Tuscaloosa. Coeducational since 1920. The faculty includes 8 professors and 10 instructors, assistants, etc., a total of 18. The course of study covers two years of thirty-six weeks each. The tuition fee each year is $221.50. The Dean is Dr. Stuart Graves. Total registration for 1928-1929 was 102. The sixty-fourth session begins Sept. 9, 1929, and ends May 27, 1930.

ARKANSAS

To secure licenses to practice medicine in Arkansas, students must complete two years of collegiate work before beginning the study of medicine.

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 300 W. Markham Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918, but resumed in 1923. Co-educational. The faculty consists of 32 professors and 37 lecturers and assistants, total 69. The curriculum embraces four years of nine months each. Entrance requirements are two years of collegiate work in addition to a four-year high school course. The fees for the four years, respectively, for residents of Arkansas are $115, $110, $105 and $105; nonresidents are charged $100 additional each year. The Dean is Dr. Frank Vinsonhaler. The total registration for 1928-1929 was 158; graduates, 43. The fifty-first session begins Sept. 16, 1929, and ends June 3, 1930.

CALIFORNIA

To secure a license to practice medicine in California under the "physician's and surgeon's" certificate, students must complete at least a year of work of college grade in physics, chemistry and biology before beginning the study of medicine.

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Third and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica and therapeutics were provided. Co-educational. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The faculty is composed of 93 professors and 187 associates and assistants, a total of 280. The course covers four years of eight and one-half months each, and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are $290, $225, $225 and $225; nonresidents are charged $300 additional each year. The Dean is Dr. Langley Porter. Total registration for 1928-1929 was 221; graduates, 40. The fifty-seventh session begins Aug. 20, 1929, and ends May 14, 1930.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles on property bounded by Boyle, Michigan, Bailey and New Jersey streets. Coeducational since 1909, the date of organization. The faculty is composed of 55 professors and 165 associates, assistants and instructors, a total of 220. The course covers a period of five years including one year of required internship. During the first and second years the students are in school twelve months each year. This is accomplished by means of the "Cooperative Plan," the student spending alternate months in an approved hospital in practical lines of medical training. The work of the first two years is given at Loma Linda and the third and fourth years at Los Angeles. Two years of college work are required for admission. The total fees for the four years, respectively, are $252.50, $244.50, $328.50 and $312.50. The president is Dr. Percy T. Magan, Los Angeles; the dean of the Loma Linda Division is Dr. Edward H. Risley, and the dean of the Los Angeles Division is Dr. Newton Evans. The total registration for 1928-1929 was 340; graduates 65. The twenty-first session begins Sept. 4, 1929, and ends June 22, 1930.

Los Angeles

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE.—Organized in 1903 as the College of Physicians and Surgeons. The first class graduated in 1905. In 1909 it became the Medical Department of the University of Southern California. The Medical Department was suspended in 1920; reorganized in May, 1928, under the present title. The faculty consists of 4 professors and 12 lecturers, assistants, etc., a total of 16. At present courses for the first two years only are offered. Eventually a five year medical course, including a year's internship in a hospital or other practical training, will be offered, Three years of collegiate work are required for admission. Coeducational since organization. The fee for each of the two years is $320. The Dean is Dr. William D. Cutter. The total registration for 1928-1929 was 54. The next session begins Sept. 16, 1929, and ends June 6, 1930.

San Francisco-Stanford University

STANFORD UNIVERSITY SCHOOL OF MEDICINE, Campus, 2398 Sacramento Street, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The first class was graduated in 1913. Co-educational since organization. The faculty consists of 88 professors and 108 lecturers, assistants, etc., a total of 196. Three years of collegiate work are required for admission. The course covers four years of eight and one-half months each, plus a fifth year of practice or intern work. The fees for the four years, respectively, are $347, $323, $315 and $315. The Dean is Dr. William Ophüls, San Francisco. The total registration for 1928-1929 was 183; graduates, 48. The twentieth session begins Oct. 1, 1929, and ends June 11, 1930.

COLORADO

No person will be granted a license to practice medicine in Colorado who is not a graduate of a school teaching the healing art as approved by the Colorado Board of Medical Examiners.

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911. Co-educational since organization. The faculty is composed of 44 professors and 116 lecturers, instructors and assistants, a total of 160. The course covers four years of nine months each and a year's internship in a hospital. The entrance requirements are two years of college work counting toward a degree in arts in an accredited college or university. The fees for residents of Colorado, for each of the four years are, respectively, $211, $231, $181 and $191. Nonresidents pay $142 more each year. The Dean is Dr. Maurice H. Rees. The total registration for 1928-1929 was 192; graduates, 40. The forty-eighth session begins Sept. 30, 1929, and ends June 16, 1930.

CONNECTICUT

To practice in Connecticut students must have completed at least one year of college work before entering on the study of medicine.

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter

in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Co-educational since 1916. The faculty consists of 79 professors and 111 lecturers and assistants, a total of 190. The requirements for admission are three years of collegiate work plus completion of courses in physics, inorganic chemistry, qualitative analysis, general biology, organic chemistry and physical chemistry or laboratory physics, all equivalent to the courses in these subjects in Yale University. The student also must have two years of French or German. The course covers four years of nine months each. The fees for the four years, respectively, are $305, $300, $300 and $320. The Dean is Dr. Milton C. Winternitz. The total registration for 1928-1929 was 207; graduates, 39. The one hundred and seventeenth session begins Sept. 26, 1929, and ends June 11, 1930.

DISTRICT OF COLUMBIA

Washington

GEORGE WASHINGTON UNIVERSITY MEDICAL SCHOOL, 1335 H Street, N.-W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. Co-educational since 1884. The faculty is composed of 60 professors and 133 instructors, demonstrators and assistants, a total of 193. Two years of collegiate work are required for admission. The course covers four years of thirty-two weeks each. The fees for the four years, respectively, are $422, $422, $388 and $388. The Dean is Dr. William C. Borden. The total registration for 1928-1929 was 290; graduates, 61. The one hundred and fifth session begins Sept. 25, 1929, and ends June 11, 1930.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 920 H Street, N.-W.—Organized in 1851. The first class graduated in 1852. The faculty contains 72 professors, 93 instructors and assistants; total 165. Two years of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The fees for each of the four sessions, respectively, are $390, $360, $360 and $350. The Dean is Dr. John A. Foote. The registration for 1928-1929 was 473; graduates, 75. The seventy-ninth session begins Sept. 26, 1929, and ends June 9, 1930.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Fifth and W Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Co-educational since 1869. Colored students compose a majority of those in attendance. The faculty comprises 30 professors and 32 lecturers and assistants, 62 in all. The admission requirements are at least two years of collegiate work, including physics, chemistry, botany and zoology, English and French or German. The course covers four years of thirty-three weeks each. The fees for each of the four sessions, respectively, are $262.50, $257.50, $257.50 and $264.50. The Dean is Dr. Numa P. G. Adams. Registration for 1928-1929 was 234; graduates, 44. The sixty-second session begins Oct. 2, 1929, and ends June 6, 1930.

GEORGIA

To secure a license to practice medicine in Georgia, students must complete at least 60 semester hours of college work, including 12 semester hours of each of physics and biology before entering on the study of medicine.

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street and Druid Hills.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Two years of college work required for admission. The faculty has 15 professors and 125 associates and assistants, a total of 140. The course of study is four years of thirty-two weeks each. The fees for each of the four years, respectively, are $260, $250, $250 and $275. The Dean is Dr. Russell H. Oppenheimer. Total registration for 1928-1929 was 191; graduates, 40. The next session begins Oct. 1, 1929, and ends June 10, 1930.

Augusta

UNIVERSITY OF GEORGIA MEDICAL DEPARTMENT, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Property transferred to university in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. Co-education was begun in 1920. The faculty includes 23 professors and 48 assistants, 71 in all. Two years of college work required for entrance. The course is four years of thirty-four weeks each. The fees for each of the four years, respectively, are $105, $100, $100 and $100 for residents of Georgia, and $300 each year for non-residents. The Dean is Dr. William H. Goodrich. The total registration for 1928-1929 was 135; graduates, 35. The one-hundred-first session begins Sept. 21, 1929, and ends June 2, 1930.

ILLINOIS

To be eligible for license to practice medicine in Illinois, students must complete two years of collegiate work, including courses in physics, chemistry, biology and a modern language before entering on the study of medicine. In addition to their four year course in medicine they must complete also a year's internship in a hospital.

Chicago

UNIVERSITY OF CHICAGO SCHOOL OF MEDICINE.—Organized in 1924 as a part of the Ogden Graduate School of Science. The work of the first two years of the medical course has been given on the Quadrangles since 1899, and that of the clinical years was added in 1924 with the organization of this medical school. Candidates for the degree of Doctor of Medicine do the work of the first two years at the School of Medicine of the Ogden Graduate School. The work of the third and fourth years may be taken at Rush Medical College or may be continued in this school. A fifth year, spent in successful internship in an approved hospital or in advanced work in some branch of medical science, is required for graduation. Coeducational. The faculty is composed of 61 professors, 83 associates, instructors, etc., a total of 144. The requirements for admission are four years of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. No application for admission is accepted after June 1. The school operates under the "quarter system" in which the year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The tuition fees for each of the four years, respectively, are $310, $300, $315 and $325. The Dean of the medical students is Dr. B. C. H. Harvey. Total registration in the first two years for 1928-1929 was 238. The next session begins Oct. 1, 1929, and ends June 12, 1930.

UNIVERSITY OF CHICAGO, RUSH MEDICAL COLLEGE.—Chartered in 1837; held first class in 1843. First class graduated in 1844. In 1887 the College became the medical department of Lake Forest University, retaining, however, its self-government. This relation was dissolved in April, 1898, and in the same month affiliation with the University of Chicago was established. Since that time the work of the first two years has been given on the University Quadrangles. In May, 1924, by a new contract, the University of Chicago took over the work of Rush Medical College as a department of the University. Since 1914 the course has included a fifth year consisting of a hospital internship or of a fellowship in one of the departments. Co-educational since 1898. Classes are limited to 140 students. No application for admission is accepted after June 1. The school operates under the "quarter system" in which the year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The faculty is composed of 109 professors, 147 associates, instructors, etc., a total of 256. The fee for the third year is $315, and for the fourth $325. Total registration for 1928-1929 was 348. The Dean is Dr. Ernest E. Irons. The eighty-fifth session begins Oct. 1, 1929, and ends June 17, 1930.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. Co-educational since 1926. The faculty comprises 105 professors and 221 lecturers and assistants, a total of 326. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University, plus two years of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each and a year's internship in an approved hospital. The total fees are $355 each year. The Dean is Dr. Irving S. Cutter. The total registration for 1928-1929 was 502; graduates, 121. The seventieth session begins Oct. 1, 1929, and ends June 16, 1930.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 508 S. Honore Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913, when the present title was assumed. Co-educational since 1898. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each, and a year's internship in an approved hospital. The faculty is composed of 74 professors, 180 assistants and instructors, a total of 254. The tuition fees are $165 each year for resident students and $35 extra for nonresidents. The Dean is Dr. David John Davis. The total registration for 1928-1929 was 509; graduates, 125. The forty-eighth session begins Sept. 30, 1929, and ends June 7, 1930.

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 S. Lincoln St., Chicago.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Eclecticism dropped and title of Bennett Medical College assumed in 1909. First class graduated in 1870, and a class graduated each subsequent year. Absorbed the Illinois Medical College in 1910 and the Reliance Medical College in 1911. In 1910 it became by affiliation the School of Medicine of Loyola University; the university assumed full control in 1915. Took over by purchase the Chicago College of Medicine and Surgery in 1917. Loyola University has been co-educational since 1900. Two years of college work are required for admission. The course of study is five years including an internship in a hospital. The faculty is composed of 112 professors, 109 assistants and instructors, a total of 221. The total fees are $300 each year. The Dean is Dr. Louis D. Moorhead. The total enrolment for 1928-1929 was 467; graduates, 90. The next session begins Sept. 30, 1929, and ends June 14, 1930.

INDIANA

Students who intend to practice medicine in Indiana must complete two years of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879), merged into it. The first class was graduated in 1908. Co-educational since organization. The faculty consists of 80 professors and 150 lecturers, associates and assistants, a total of 230. Two years of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees for each of the four years, respectively, are $190, $175, $175 and $185 for residents of Indiana and $75 more a year is charged for nonresidents. A fifth optional intern year leading to the "M.D. cum laude" has been added. The Dean at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1928-1929 was 417; graduates, 100. The next session begins Sept. 13, 1929, and ends June 9, 1930.

IOWA

Students who desire to practice medicine in Iowa must complete two years of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and English; they must also have completed a year's internship in an approved hospital.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Co-educational since 1870. The faculty is made up of 38 professors, 56 lecturers, demonstrators and assistants, a total of 94. Two years of college work, including courses in physics, chemistry, biology, French or German and English, are required for admission. The course of study covers four years of thirty-four weeks each. The tuition fee is $192 each year for residents of Iowa and $456 for nonresidents, plus a matriculation fee of $10 and a graduation fee of $15. The Dean is Dr. Henry S. Houghton. Total registration for 1928-1929 was 483; graduates, 85. The sixtieth session begins Sept. 23, 1929, and ends June 2, 1930.

KANSAS

Students who desire to practice medicine in Kansas must complete at least two years of collegiate work, including college courses in physics, chemistry and biology in addition to an accredited four-year high school course.

Lawrence and Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Kansas City. Absorbed Kansas Medical College in 1913. Co-educational since 1880. The faculty, includes 23 professors and 115 instructors, assistants, etc., a total of 138. The requirements for admission are two years of collegiate work. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively, $162, $154, $155 and $160. For nonresidents the fees are $50 additional each year. The Dean is Dr. Harry Roswell Wahl. The total registrations for 1928-1929 was 223; graduates, 43. The fiftieth session begins Sept. 19, 1929, and ends June 9, 1930.

KENTUCKY

To be eligible for license to practice medicine in Kentucky, students must complete two years of college work, including courses in physics, chemistry, biology and a modern language, prior to beginning the study of medicine.

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, First and Chestnut Streets.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 name changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908 the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Co-educational since organization. Two years of college work required for admission. The faculty numbers 23 professors and 99 assistants, instructors, etc., a total of 122. Students limited to 90 Freshmen, 90 Juniors; number of Sophomores and Seniors contingent upon number promoted. Course covers four years of thirty-two weeks each exclusive of vacations and examinations. Fees for four years are, respectively, $365, $365, $370 and $380. The Dean is Dr. John Walker Moore. Total registration for 1928-1929 was 322; graduates, 68. Next session begins Sept. 16, 1929, and ends May 30, 1930.

LOUISIANA

Students who desire to practice medicine in Louisiana must complete, at an approved college or university two years of college work, including biology, physics, chemistry and a modern language, before entering on the study of medicine.

New Orleans

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. Co-educational since 1915. The faculty has 29 professors and 124 associate and assistant professors, instructors and assistants, a total of 153. The course covers four years of thirty-two weeks each. Two years of collegiate work are required for admission. Total fees for each of the four years, respectively, are $305, $295, $280 and $310. The Dean is Dr. Charles C. Bass. The total registration for 1928-1929 was 438; graduates, 103. The ninety-sixth session begins Sept. 25, 1929, and ends June 11, 1930.

MARYLAND

To be eligible to practice medicine in Maryland, students, in addition to a four-year high school education, must complete at least two years of college work, including courses in physics, chemistry, biology, prior to beginning the study of medicine.

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, Washington and Monument Streets.—Organized in 1893. Co-educational since organization. The first class graduated in 1897. The faculty consists of 67 professors and 258 assistants, instructors, etc., a total of 325. The requirements for admission demand that the applicant possess a collegiate degree and have a knowledge of French and German (two years each of college instruction), physics and biology, such as may be obtained from a year's course, and a three years' course in chemistry. The course extends over four years of eight and one-half months each. The total fees for each year are $610. The Dean is Dr. Lewis H. Weed. Total registration for 1928-1929 was 283; graduates, 66. The thirty-seventh session begins Oct. 1, 1929, and ends June 10, 1930.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND THE COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Co-educational since 1918. The faculty consists of 89 professors and 136 instructors and assistants, a total of 225. Two years of college work are required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are $335, $325, $325 and $340 for residents of the state; for nonresidents the fees are $150 additional each year. The Dean is Dr. J. M. H. Rowland. Total registration for 1928-1929 was 412; graduates, 103. The one hundred and twenty-third session begins Sept. 30, 1929, and ends June 7, 1930.

MASSACHUSETTS

Boston

HARVARD UNIVERSITY MEDICAL SCHOOL, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 94 professors and 313 instructors and assistants, a total of 407. Candidates for admission must present a college degree or two years of work leading to such a degree with standing in the upper third of the class. The college work must include a year of physics, biology, general chemistry, a half year of organic chemistry, and a reading knowledge of French or German. The total fee for each of the four years is $400 plus $5 the first year for matriculation. The Dean is Dr. David L. Edsall. The total registration for 1928-1929 was 515; graduates, 137. The one hundred and forty-seventh session begins Sept. 23, 1929, and ends June 19, 1930.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. Became nonsectarian in 1918. Co-educational since organization. Two years of collegiate work are required for admission. The faculty includes 17 professors, 132 associates, etc., making a total of 149. The course covers four years of thirty-two weeks each. Total fees for each of the four years, respectively, are $371.00, $366.50, $341.50 and $351.50 for women and $5.00 more each year for men. The Dean is Dr. Alexander S. Begg. Total registration for 1928-1929 was 214; graduates, 49. The fifty-seventh session begins Sept. 25, 1929, and ends June 16, 1930.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Co-educational since 1894. It has a faculty of 58

professors and 152 assistants, lecturers, etc., a total of 210. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $357, $352, $352 and $362. The Dean is Dr. Albert W. Stearns. Total registration for 1928-1929 was 493; graduates, 113. The thirty-fourth session begins Sept. 25, 1929, and ends May 31, 1930.

MICHIGAN

Students who desire to practice medicine in Michigan, in addition to four-year high school education, must complete two years of work in an approved college, including courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine; they must also have completed an internship in a hospital.

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Co-educational since organization. It has a faculty of 28 professors, 6 associate professors, 18 assistant professors, 66 instructors and lecturers; a total of 118. The entrance requirements are seventy semester hours, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of French or German. The curriculum embraces four years of nine months each. The total fees for Michigan students are $188, $193, $193 and $190.50 for each of the four years, respectively, plus a matriculation fee of $10; for nonresidents, $80 per year additional. The matriculation fee for nonresidents is $25. The Dean is Dr. Hugh Cabot. The total registration for 1928-1929 was 644; graduates, 158. The eightieth session begins Sept. 20, 1929, and ends June 23, 1930.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 1516 St. Antoine St.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. Co-educational since 1917. Entrance requirements are three years of college work. The faculty embraces 33 professors, 101 lecturers, etc., a total of 134. The course covers four years of nine months each and a fifth hospital intern year. The total fees each year for residents of Detroit are $200; for nonresidents, $285. The Dean is Dr. W. H. MacCraken. The total registration for 1928-1929 was 297; graduates, 47. The forty-fifth session begins Sept. 26, 1929, and ends June 21, 1930.

MINNESOTA

Students intending to practice medicine in Minnesota, in addition to a four-year high school course, must complete two years of college work, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Co-educational since organization. The faculty includes 153 professors and 158 instructors and assistants, a total of 311. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis and organic chemistry; eight credits of zoology, and a reading knowledge of scientific French or German. Students are required to secure a degree of B.S. or A.B. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four-year course. The M.D. is conferred after a year of intern work, of advanced laboratory work, or of public health work has been completed. Classes are graduated three times a year, in March, June and December. Total fees are $225 for residents and $300 for nonresidents, each year of three quarters. The Dean is Dr. E. P. Lyon. The total registration for 1928-1929 was 484; graduates, 119. The forty-first session begins Sept. 30, 1929, and ends June 14, 1930. The summer quarter began June 18.

MISSISSIPPI

Students desiring to practice medicine in Mississippi, in addition to a four-year high school education, must complete two years of work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

University

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Co-education since organization. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and one-half months. Entrance requirements are two years of collegiate work. The total fees each year for residents are $163; for nonresidents, $50 per year additional. The faculty numbers 9 professors and 8 instructors, assistants, etc., a total of 17. The Dean is Dr. J. O. Crider. The total registration for 1928-1929 was 63. The twenty-seventh session begins Sept. 18, 1929, and ends June 3, 1930.

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Co-educational since 1872. The faculty includes 12 professors and 19 assistant professors, lecturers, etc., a total of 31. The course covers two years of thirty-five weeks each. The entrance requirements are three years of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours; organic chemistry, 5 hours, and general bacteriology, 3 hours. Total fees for the first year are $141, for the second $126. Nonresidents of the state pay $10 per term extra. The Dean is Dr. Guy L. Noyes. Total registration for 1928-1929 was 80. The next session begins Sept. 11, 1929, and ends June 4, 1930.

St. Louis

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Co-educational since 1918. The faculty comprises 44 professors and 183 lecturers, instructors, etc., a total of 227. Three years of college work are required for admission, including courses in English, physics, chemistry and biology, and a reading knowledge of German or French. The course is four years of eight months each. The total fees for the four years are, respectively, $372, $367, $367 and $372. The Dean is Dr. McKim Marriott. The total registration for 1928-1929 was 300; graduates, 74. The next session begins Sept. 26, 1929, and ends June 10, 1930.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Boulevard.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The faculty is composed of 75 professors and 187 lecturers and assistants, a total of 262. The requirement for admission is a qualitative one based upon a minimum quantitative standard of two years of collegiate study in the customary subjects but applicants presenting meritorious credit in excess of the two year minimum are accepted by preference. The curriculum covers four years of thirty-two weeks each. The summer session, beginning usually about June 1 and continuing for eight weeks, is optional and offers courses academically equivalent to those in the regular session. The total fees for the four years, respectively, are $380, $375, $375 and $295. The Dean is Alphonse M. Schwitalla, Ph.D., and the Associate Dean is Charles Hugh Neilson, M.D. The total registration for 1928-1929 was 536; graduates, 109. The next session begins Sept. 24, 1929, and ends June 1, 1930.

NEBRASKA

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, 306 North 14th Street.—Organized in 1892 as the John A. Creighton Medical College. Present title in 1921. The first class graduated in 1893. Co-educational since organization. It has a faculty of 55 professors and 45 instructors, lecturers and assistants, a total of 100. Two years of collegiate work are required for admission. The course of study embraces four years of eight months each. The total fees each year for the four years are, respectively, $295, $285, $285 and $295. The Dean is Dr. Hermann von W. Schulte. Total registration for 1928-1929 was 200; graduates, 50. The forty-eighth session begins Sept. 26, 1929, and ends June 5, 1930.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913, when all four years were transferred to Omaha. Co-educational since 1882. The faculty is composed of 62 professors and 69 lecturers and instructors, total 131. Two years of collegiate work are required for admission, including courses in physics, chemistry and zoology. The fees for each of the four years, respectively, are $217, $212, $212 and $212. The Dean is Dr. J. Jay Keegan. Total registration for 1928-1929 was 312; graduates, 76. The next session begins Sept. 20, 1929, and ends June 7, 1930.

NEW HAMPSHIRE

Students desiring to practice medicine in New Hampshire, in addition to a four-year high school education, must complete at least two years of work in an approved college of liberal arts, prior to beginning the study of medicine.

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 14 professors and 5

instructors, a total of 19. Three years of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for the first year are $410 and $400 for the second year. The Dean is Dr. John P. Bowler. The total registration for 1928-1929 was 39. The next session opens Sept. 19, 1929, and ends June 17, 1930.

NEW YORK

Students who desire to practice in New York must complete two years of college work, including courses in physics, chemistry, biology, English composition and literature, before entering on the study of medicine.

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Co-educational since 1915. The faculty is composed of 24 professors and 59 instructors, assistants, etc., a total of 83. Two years of collegiate work, including college courses in physics, chemistry (including organic and analytic), biology, English, and a modern foreign language, are required for admission. The curriculum covers four years of eight months each. The total fees for the four years, respectively, are $320, $315, $305 and $305. The Dean is Dr. Thomas Ordway. The total registration for 1928-1929 was 122; graduates, 24. The ninety-ninth session begins Sept. 23, 1929, and ends June 9, 1930.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, 24 High Street. —Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Co-educational since organization. The faculty is composed of 63 professors and 145 lecturers, assistants, etc., a total of 208. Two years of collegiate work, including college courses in physics, chemistry, biology, English and French or German, are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $527, $517, $517 and $527. The Acting Dean is Dr. Edward W. Koch. Total registration for 1928-1929 was 279; graduates, 63. The eighty-fourth session begins Sept. 25, 1929, and ends June 10, 1930.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 630 West 168th Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. Co-educational since 1917. The faculty is composed of 170 professors and 419 instructors, demonstrators, etc., a total of 589. Two years of collegiate work of 72 points, including courses in physics, chemistry, biology, English and either French or German, constitute the minimum requirement for admission. The work covers four years of eight months each. The Dean is Dr. William Darrach. The total fees for the four years, respectively, are: $535, $520, $520 and $540. Total registration for 1928-1929 was 420; graduates, 107. The one hundred and twenty-second session begins Sept. 25, 1929, and ends June 4, 1930.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City, and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or in New York. Co-educational since organization. The faculty is composed of 74 professors and 154 assistants, lecturers, instructors, etc., a total of 228. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have a knowledge of physics, chemistry, biology, English and a modern language. The fees for each of the four years are, respectively, $510, $500, $500 and $535. The Dean is Dr. G. Canby Robinson. Total registration for 1928-1929 was 259; graduates, 63. The thirty-second session begins Oct. 1, 1929, and ends June 12, 1930.

LONG ISLAND COLLEGE HOSPITAL, 350 Henry Street, Brooklyn. — Organized in 1858. The first class graduated in 1860. Co-educational since 1918. It has a faculty of 109 professors and 155 assistants, instructors, etc., a total of 264. At least two years of collegiate work, including college courses in physics, chemistry and biology, are required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are $545, $550, $530 and $560. The Dean is Prof. Adam M. Miller. Total registration for 1928-1929 was 440; graduates, 103. The seventy-first session begins Sept. 30, 1929, and ends June 7, 1930.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, 450 East 64th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. Co-educational since 1919. The course covers four years of eight months each. It has a faculty of 63 professors and 73 lecturers and assistants, a total of 136. The total fees for the four years are, respectively, $540, $530, $530 and $560. The Dean is Dr. Claude A. Burrett. Total registration for 1928-1929 was 327; graduates, 50. The seventieth session begins Sept. 16, 1929, and ends June 1, 1930.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, 338 East Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. Co-educational since 1919. The faculty is composed of 83 professors, associate professors and assistant professors, and 141 lecturers, instructors, etc., in all, 224. The course covers four years of eight months each. Entrance requirements are 72 semester hours of collegiate work in a registered college leading to a bachelor's degree, including courses in physics, chemistry and biology. The fees for each of the four years, respectively, are $535, $523, $512 and $533. The Dean is Dr. Samuel A. Brown. Total registration for 1928-1929 was 477; graduates, 104. The next session begins Sept. 18, 1929, and ends June 11, 1930.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE, Elmwood Ave. and Crittenden Blvd.—Organized in 1925 as the Medical Department of the University of Rochester. Co-educational since organization. The faculty is composed of 27 professors, 96 lecturers, assistants, instructors, etc., a total of 123. The work embraces a graded course of 4 years of 9 months each. Three years of collegiate work are required for admission. The total fees for each year are $300. The total registration for 1928-1929 was 109; graduates, 18. The Dean is Dr. George H. Whipple. The fifth session begins Sept. 23, 1929, and ends June 9, 1930.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 309-311 South McBride Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Co-educational since organization. The faculty is composed of 30 professors and 132 associate and assistant professors, lecturers and instructors, a total of 162. Two years of a recognized college course are required for admission. The course covers four years of thirty-four weeks each. The fees for each of the first three years are $400, for the fourth year $410. The Dean is Dr. Herman G. Weiskotten. The total enrolment for 1928-1929 was 181; graduates, 40. The fifty-ninth session begins Sept. 20, 1929, and ends June 9, 1930.

NORTH CAROLINA

Students intending to practice medicine in North Carolina must complete two years of college work, including courses in physics, chemistry and biology in addition to 14 units of high school work, before beginning the study of medicine.

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Co-educational since 1914. Two years of collegiate work are required for admission. The faculty is composed of 9 professors and 3 instructors, a total of 12. The fees for each year are $220. The Dean is Dr. I. H. Manning. The total registration for 1928-1929 was 76. The forty-fourth session begins Sept. 18, 1929, and ends June 9, 1930.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology, numbers 9 professors and 7 assistants. Only the first two years of the medical course are offered. After the completion of freshman and sophomore college work and two years of medicine, a certificate will be given. The B.S. degree in medicine will be given only after completion of three years of college work and two years of medicine. Each annual course extends over nine months. The fees for the first year are $220 and $225 for the second year. The Dean is Dr. Thurman D. Kitchin. The total registration for 1928-1929 was 54. The twenty-eighth session begins Sept. 16, 1929, and ends June 6, 1930.

NORTH DAKOTA

Students intending to practice medicine in North Dakota, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts, including courses in Latin, physics, chemistry, biology, botany and zoology, prior to beginning the study of medicine, and must show evidence of having spent at least one year as an intern in a hospital.

University

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Co-educational since organization. Two years' work in a college of liberal arts is required for admission. The fees are about $65 each year for resident students and $135 for nonresidents. The faculty consists of 5 professors and 8 instructors, a total of 13. The Dean is Dr. H. E. French. The total registration for 1928-1929 was 57. The twenty-fourth session begins Sept. 16, 1929, and ends June 10, 1930.

OHIO

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden and Bethesda Avenues, Mount Auburn—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Co-educational since organization. Two years of college work are required for admission. The faculty consists of 100 professors and 149 associates, assistants, etc., a total of 249. The course covers four years of eight months each. A year's internship in an approved hospital is also required. The total fees for the four years are, respectively, $360, $360, $300 and $320, and if not legal citizens of Cincinnati, $50 additional The Dean is Dr. Arthur C. Bachmeyer. The total registration for 1928-1929 was 269; graduates, 67. The next session begins Sept. 23, 1929, and ends June 14, 1930.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 2109 Adelbert Road.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Co-educational since 1919, The faculty includes 57 professors and 142 lecturers, assistants, etc., a total of 199. The curriculum embraces three years of eight and one-half months each and one year of eleven months. Three years of college work are required for admission with the additional requirement that the student must secure the baccalaureate degree on completion of one or two years of work in the medical school. The total fees for each of the four years are, respectively, $375, $360, $350 and $360. The Dean is Dr. Torald Sollmann. The total registration for 1928-1929 was 244; graduates, 51. The eighty-seventh session begins Sept. 26, 1929, and ends June 12, 1930.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Neil and Eleventh Avenues.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Co-educational since organization. The faculty consists of 43 professors and assistant professors, 63 lecturers, instructors, demonstrators, etc., a total of 106. Two years of collegiate work are required for admission. The course covers four years of 34 weeks each. Tuition fees are $196, $186, $186 and $191 each year, respectively, for residents of Ohio, and $105 more for nonresidents. The Dean is Dr. John H. J. Upham. The total registration for 1928-1929 was 228; graduates, 79. The next session begins Oct. 1, 1929, and ends June 9, 1930.

OKLAHOMA

Students intending to practice medicine in Oklahoma, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to beginning the study of medicine.

Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. Beginning September, 1928, entire course has been given at Oklahoma City. The first class graduated in 1911. Co-educational since organization. It has a faculty of 43 professors and 60 lecturers, assistants, etc., a total of 103. Two years of college work are required for admission. The course is four years of nine months each. An optional course of six years is offered for the degrees of B.S. and M.D. The total fees for the four years are, respectively, $108, $105.50, $28 and $28. For students residing outside the State of Oklahoma there is a tuition fee of $200 per year. The Dean is Dr. LeRoy Long, School of Medicine Building, 13th and Phillips Street, Oklahoma City, Okla. The total registration for 1928-1929 was 192; graduates, 38. The thirtieth session begins Sept. 16, 1929, and ends June 3, 1930.

OREGON

Students who desire to practice in Oregon must complete two years of college work before entering on the study of medicine.

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Co-educational since organization. It has a faculty of 58 professors and 138 lecturers, assistants, etc., a total of 196. Entrance requirements are three years of college work or its equivalent. The course is four years of thirty-three weeks each. The total fees for the four years are, respectively, $200, $195, $190 and $190 for residents of Oregon, and $60 per year additional for nonresidents. The Dean is Dr. Richard B. Dillehunt. The total registraton for 1928-1929 was 229; graduates, 56. The forty-third session begins Oct. 2, 1929, and ends June 9, 1930.

PENNSYLVANIA

Students intending to practice medicine in Pennsylvania, in addition to a four-year high school education, must complete a year's work in an approved college of liberal arts, including college courses in physics, chemistry and biology, before beginning the study of medicine. They must also have completed an internship of at least one year in an approved hospital.

Philadelphia

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania, was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Co-educational since 1914. The faculty consists of 76 professors, associate and assistant professors, and 203 lecturers, associates, instructors, etc., a total of 279. Three years of college work are required for admission, including courses in physics, biology or zoology, chemistry, including general inorganic, organic and analytical, English and French or German. The first class is limited to 110 students; third and fourth to 135 each. The course embraces four years of study of thirty-three weeks each. The total fees are $400 each year, with a deposit fee of $15 and a matriculation fee of $5. The Dean is Dr. William Pepper. Total registration for 1928-1929 was 489; graduates, 134. The one hundred and sixty-fourth session begins Sept. 27, 1929, and ends June 18, 1930.

JEFFERSON MEDICAL COLLEGE, 1001 Walnut Street.—Organized in 1825 with its present title as the Medical Department of Jefferson College, Canonsburg, Pa. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 58 professors, associate and assistant professors, and 158 associates, lecturers, demonstrators and instructors, a total of 216. Entrance requirements are a completed standard four-year high school or college preparatory course, or the equivalent, and in addition three years of work leading to a degree in an approved college of arts and science, including specified courses in physics, general and organic chemistry and biology, with laboratory work in each subject. The course of study covers four years of eight and one-half months each. The total fees for the four years are, respectively, $440, $430, $425 and $425. The Dean is Dr. Ross V. Patterson. The total registration for 1928-1929 was 585; graduates, 142. The one hundred and fifth session begins Sept. 23, 1929, and ends June 6, 1930.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, 2101 North College Avenue.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 26 professors and 52 assistants, lecturers, etc., in all, 78. Entrance requirements are a completed course in a standard secondary school, and in addition two years of collegiate work, including courses in physics, chemistry, biology and French or German. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, $350, $375, $400 and $400. The Dean is Dr. Martha Tracy. The total registration for 1928-1929 was 98; graduates, 18. The eightieth session begins Sept. 18, 1929, and ends June 11, 1930.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 216 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition two years devoted to a college course, including English and either French, German or Spanish, physics, chemistry and biology. It has a faculty of 57 professors and 73 lecturers, instructors, etc., in all, 130. The work covers four years of eight and one-half months each. Fees for each of the four years are, respectively, $350, $352, $352 and $375. The Dean is Dr. William A. Pearson. The total registration for the college year 1928-1929 was 430; graduates, 63. The eighty-second session begins Sept. 30, 1929, and ends June 12, 1930.

THE TEMPLE UNIVERSITY SCHOOL OF MEDICINE, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. Co-educational since organization. The faculty numbers 20 professors and 129 associates, assistants, etc., a total of 149. Two years of college work are required for admission. The fees for each of the four years, respectively, are $415, $390, $390 and $390. The Dean is Dr. William N. Parkinson. The total registration for 1928-1929 was 220; graduates, 48. The twenty-ninth session begins Sept. 25, 1929, and ends June 23, 1930.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Co-educational since 1899. The faculty is composed of 19 professors and 188 associates, assistants, etc., 207 in all. Entrance requirements are two years of college work, including English, chemistry (inorganic and organic), physics and biology. The course of study is four years of eight and one-half months each. The total fees for the four years, respectively, are $415, $400, $400 and $410. The Dean is Dr. Raleigh R. Huggins. The total registration for 1928-1929 was 261; graduates, 66. The forty-fourth session begins Sept. 23, 1929, and ends June 11, 1930.

SOUTH CAROLINA

Students intending to practice medicine in South Carolina must complete, in addition to high school work, two years in an approved college, including courses in English, physics, chemistry and biology.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Co-education from 1895 to 1912, when privileges for women were withdrawn, but they were restored in 1917. It has a faculty of 30 professors and 35 lecturers, instructors, etc., a total of 65. The course covers four years of eight months each. Two years of collegiate work including courses in physics, chemistry, biology and a modern foreign language are required for admission, in addition to a standard high school preparation. The total fees are $170 annually. The Dean is Dr. Robert Wilson. Total enrolment for 1928-1929 was 153; graduates, 26. The one-hundred-first session begins Sept. 26, 1929, and ends June 5, 1930.

SOUTH DAKOTA

Students intending to practice medicine in South Dakota must show that they matriculated in and graduated from medical colleges which required at least two years of collegiate work for admission, including courses in physics, chemistry, biology and a modern language. They must also have completed a year's internship in an approved hospital.

Vermilion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1907. Co-educational since organization. Offers only the first two years of the medical course. Two years' work in a college of liberal arts is required for admission. The fees are $102 each year for residents, $152 for non-residents. The faculty numbers 11. The Dean is Dr. George R. Albertson. The total registration for 1928-1929 was 55. The twenty-third session begins Sept. 18, 1929, and ends June 14, 1930.

TENNESSEE

Students intending to practice medicine in Tennessee must complete two years of collegiate work, including courses in physics, chemistry, biology and a reading knowledge of French or German, in addition to a four-year high school course, before entering on the study of medicine.

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 874 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Co-educational since 1911. The faculty includes 67 professors and 121 assistants, instructors, etc., a total of 188. Entrance requirements are a high school education plus two years of collegiate work. Students taking the two-year premedical course in Knoxville may secure the B.S. and M.D. degrees. The total fees for the four years, respectively, are $177, $164.50, $149.50 and $167 for residents of the state, and $125 more each year for nonresidents. The administrative officer is Orren W. Hyman, Ph.D. Total registration for 1928-1929 was 384; graduates, 72. The next session begins Sept. 30, 1929, and ends June 14, 1930.

Nashville

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty-First and Edgehill.—This school was founded in 1874. The first class graduated in 1875. Co-educational since September, 1925. The faculty consists of 66 professors and 109 lecturers, a total of 175. Students must have successfully completed at least three years of college work with such grades as will entitle them to receive the Bachelor's degree after one year in the School of Medicine. The course covers four years of nearly nine months each. The total fees for the four years, respectively, are $315, $315, $315 and $320. The Dean is Dr. Waller S. Leathers. The total registration for 1928-1929 was 181; graduates, 43. The fifty-sixth session begins Sept. 24, 1929, and ends June 11, 1930.

MEHARRY MEDICAL COLLEGE. Colored. 1118 First Avenue, South.—This school was organized in 1876 as the Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Co-educational since 1876. The faculty is made up of 18 professors and 27 instructors, demonstrators, lecturers, etc., 45 in all. Two years' work in a college of liberal arts is required for admission. The work embraces four years of thirty-two weeks each. The total fees for the four years, respectively, are $218, $210, $210 and $220. The President is Dr. John J. Mullowney. Total registration for 1928-1929 was 214; graduates, 48. The fifty-fourth session begins Oct. 1, 1929, and ends May 22, 1930.

TEXAS

Students intending to practice medicine in Texas must complete at least two years of collegiate work, including courses in physics, chemistry, biology and English in addition to a high school course, before entering on the study of medicine.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 810 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Co-educational since 1900, the date of organization. The first class graduated in 1901. The faculty consists of 65 professors and 61 instructors and assistants, a total of 126. Entrance requirements are two years of college work in addition to a four-year high school education. The course is four years of eight months each. The fees for each of the four years, respectively, are $307, $292, $282 and $282. The Dean is Dr. Walter H. Moursund. Total registration for 1928-1929 was 356; graduates, 62. The thirtieth session begins Sept. 23, 1929, and ends June 2, 1930.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Co-educational since organization. It has a faculty of 39 professors and 19 lecturers and instructors, a total of 58. The curriculum embraces four years of eight months each. The entrance requirement is two years of collegiate work in addition to a four-year high school education. The freshman class is limited to 100 students on a scholarship basis, Texans having preference. The total fees for the four years, respectively, are $82, $78, $66 and $78 for residents of the state, and $150 additional each year for nonresidents. The Dean is Dr. George E. Bethel. Total registration for 1928-1929 was 275; graduates, 51. The thirty-ninth session begins Oct. 1, 1929, and ends May 31, 1930.

UTAH

Students intending to practice medicine in Utah, in addition to a four-year high school education, must complete at least two years of collegiate work, including courses in physics, chemistry and biology, prior to beginning the study of medicine. In addition to the course in medicine they must complete a year's internship in a hospital.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Co-educational since organization. Gives only first two years of medical course. Each course covers thirty-six weeks. Three years of collegiate work are required for admission. The medical faculty consists of 6 professors and 10 lecturers and assistants, a total of 16. The fees are $150 each year. The Dean is Dr. Beryl I. Burns. Total registration for 1928-1929 was 55. The twenty-third session begins Sept. 26, 1929, and ends June 3, 1930.

VERMONT

Students who desire to practice medicine in Vermont, in addition to a standard four-year high school education, must complete two years of collegiate work, including college courses in physics, chemistry and biology, before entering on the study of medicine.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Co-educational since 1920. It has a faculty of 35 professors and 25 lecturers, instructors, etc., a total of 60. Two years of college work in addition to a four-year high school education is required for admission. The course of study covers four years of nine months each. For residents of Vermont the total fees are $327.50, $327.50, $300 and $325 for each of the four years, respectively. Nonresidents are charged an additional $75 each year. The Dean is Dr. James N. Jenne. The total registration for 1928-1929 was 140; graduates, 30. The next session begins Sept. 18, 1929, and ends June 16, 1930.

VIRGINIA

Students desiring to practice in Virginia must be graduates of medical colleges which require for admission two years of collegiate work, including courses in physics, chemistry, biology and a modern language, preferably German, in addition to a four-year high school education.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Co-educational since the session 1920-1921. It has a faculty of 31 professors and 38 lecturers, instructors, assistants, etc., a total of 69. The requirements for admission are the completion of a four-year

high school course, or its equivalent, and two years of college work devoted to English, mathematics, chemistry, physics and biology. For residents of Virginia the total fees for the four years, respectively, are $290, $290, $265 and $255. Nonresidents are charged an additional $20 each year. The Dean is Dr. James C. Flippin. The total registration 1928-1929 was 243; graduates, 53. The one-hundred-first session begins Sept. 12, 1929, and ends June 10, 1930.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Clay Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Co-educational since 1918. Classes were graduated in 1839 and in all subsequent years. It has a faculty of 58 professors and 85 lecturers, instructors, etc., a total of 143. The requirement for admission is a four-year high school education and in addition two years of collegiate work, including courses in physics, chemistry, biology and English. The course embraces four years of eight months each. Total fees for the four years, respectively, are $307.50, $307.50, $292.50 and $322.50. Nonresidents are charged an additional $100 each year. The Dean is Dr. Manfred Call. The total registration for 1928-1929 was 371; graduates, 90. The ninety-second session begins Sept. 17, 1929, and ends June 3, 1930.

WEST VIRGINIA

Students who desire to practice medicine in West Virginia must complete, in addition to a high school education, two years of collegiate work, including courses in physics, chemistry and biology, and German or French, before entering on the study of medicine.

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. Co-educational since organization. Two years of college work is required for admission, and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 10 professors and 10 lecturers, instructors, assistants, etc., a total of 20. Fees: For residents of the state, $115 each year; for nonresidents, $365. The Dean is Dr. John N. Simpson. The total registration for 1928-1929 was 113. The next session begins Sept. 16, 1929, and ends June 2, 1930.

WISCONSIN

Students intending to practice medicine in Wisconsin, prior to entering a medical school, must complete, besides a four-year high school course, two years of collegiate work, including courses in physics, chemistry, biology and German or French. In addition to their four-year course in medicine they must complete also a year's internship in a hospital.

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 412 North Charter Street.—Organized in 1907. Gave only first two years of the medical course until 1925, when the clinical years were added. Co-educational since organization. For matriculation at least two years in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 52 professors and 55 lecturers, instructors, etc., a total of 107. Tuition fees: $150 per year for nonresidents of Wisconsin. Incidental and laboratory fees for both resident and nonresident students average about $150 per year. The Dean is Dr. Charles R. Bardeen. The registration for 1928-1929 was 294; graduates, 44. The twenty-second session begins Sept. 25, 1929, and ends June 23, 1930.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 638 Fourth Street.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Co-educational since organization. It has a faculty of 153. The entrance requirements are two years of college work, including courses in physics, chemistry, biology and a modern foreign language. The curriculum covers four years of eight and a half months each, and one year's internship in an approved hospital. The fees for the four years, respectively, are, $314, $304, $304 and $289. The Dean is Dr. Bernard F. McGrath. The registration for 1928-1929 was 363; graduates, 57. The eighteenth session begins Sept. 23, 1929, and ends June 11, 1930.

PHILIPPINE ISLANDS

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE, 547 Herran Street, Ermita, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. In 1910 the title was changed to University of the Philippines College of Medicine and Surgery. Present title in 1923. The faculty includes 47 professors and 45 lecturers, assistants, etc., a total of 92. A two-year collegiate course, including courses in English, physics, chemistry, biology and either French or German, is required for admission. The course extends over five years. In the fifth year the students serve as interns in the Philippine General Hospital. The fees for the four years, respectively, are $101.75, $84.25, $64.25 and $69.25. The Dean is Dr. Fernando Calderon. The total registration for 1928-1929 was 329; graduates 31. The twenty-third session begins June 10, 1929, and ends March 24, 1930.

UNIVERSITY OF ST. THOMAS COLLEGE OF MEDICINE AND SURGERY, Manila.—University founded by papal decree in 1587. Medical department added in 1871. The faculty includes 29 professors and 20 assistants, instructors, etc., a total of 49. A two-year collegiate course is required for admission. The course of study is five years, including an internship in a hospital. The registration for 1927-1928 was 701; graduates, 64. The Dean is Dr. Jose L. de Castro.

CANADA

The Dominion of Canada has nine medical colleges, which provide either a six-year course, including courses in physics, chemistry and biology, or a five year medical course with one premedical year. This course is equal to that in the medical schools of the United States which require two years of college work for admission, including the science courses named.

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Co-educational since organization. Has given the complete six-year medical course since 1924. The faculty includes 37 professors and 39 instructors, assistants, etc., a total of 76. Fees for each year are $207. The Dean is Dr. Allan C. Rankin. The registration for 1928-1929 was 163; graduates, 18. The seventeenth session begins Sept. 27, 1929, and ends May 15, 1930.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Corner of Emily and Bannatyne, Winnipeg.—Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Co-educational since organization. The faculty includes 49 professors and 86 instructors, assistants, a total of 135. The total fees for the five years, respectively, are $205, $200, $210, $210 and $75. Matriculation requirements include two years of college work in the faculty of Arts and Science of a recognized university subsequent to the complete high school course required for entrance to the latter. The course extends over five years of eight months each. The Dean is Dr. S. Willis Prowse. Total registration for 1928-1929 was 272; graduates, 50. The next session begins Sept. 30, 1929, and ends May 25, 1930.

Nova Scotia

DALHOUSIE UNIVERSITY, FACULTY OF MEDICINE, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. Co-educational since 1871. It has a faculty of 18 professors and 44 lecturers and demonstrators, a total of 62. Requires for matriculation two years of Arts and a graded course of five years. The fees are $225 each year. The total registration in regular classes for 1928-1929 was 130; graduates, 16. The Dean is Dr. John Stewart. The next session begins Sept. 10, 1929, and ends May 13, 1930.

Ontario

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. Co-educational since 1903. The course of study covers six years of eight months each, the first two being devoted largely to physics, chemistry, biology and cultural courses in history, science and English. It has a faculty of 60 professors and 202 lecturers, associates, etc., a total of 262. The fees are $171 for the first year; for the second to the fifth year, $221, and $244 for the sixth year. The Dean is Dr. Alexander Primrose. The total registration for 1928-1929 was 746; graduates, 108. The next session begins Sept. 24, 1929, and ends May 24, 1930.

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the university, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became a part of Queen's University. The faculty numbers 54. The fees for the six years are, respectively, $168, $176, $176, $201, $201 and $231. The last includes the fee of $30 for the M.D., C.M. degrees. The course covers six years of thirty teaching weeks each, the first including courses in physics, chemistry, biology, history or economics or English. The total registration in 1928-1929 was 314; graduates, 51. The Dean is Dr. J. C. Connell. The next session begins Sept. 25, 1929, and ends May 28, 1930.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, London, Ontario.—Organized in 1881 as the Western University Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario

since 1913. Co-educational since 1913. The faculty numbers 77. Two years of premedical college work, including courses in physics, chemistry and biology, is required for admission to a four year medical course—all of which is referred to as a six year medical course. The total fees for the last four years, respectively, are $200, $200, 208 and $233. The Dean is Dr. A. B. Macallum. Total registration for 1928-1929 was 137; graduates, 30. The next session begins Sept. 24, 1929, and ends May 30, 1930.

Montreal

McGILL UNIVERSITY, FACULTY OF MEDICINE, 3640 University Street, Montreal.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. Co-educational since 1919. The course consists of three premedical years, and five medical years of eight months each, the fifth being a year of hospital work. The faculty consists of 61 professors and 135 lecturers, etc., a total of 196. The total fees for each of the five medical years are $267. The total registration for 1928-1829 was 463; graduates, 63. The Dean is Dr. C. F. Martin. The next session begins Sept. 18, 1929, and ends May 28, 1930.

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE, 1265 St. Denis Street, Montreal.—Organization in 1843, incorporated in 1845 as the Montreal School of Medicine and Surgery. In 1891, by act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name, by act of Parliament, in 1920. A class was graduated in 1843 and in each subsequent year. One woman student admitted in the fall of 1925. The faculty numbers 105. The course covers one premedical and five medical years. The total fees for each of the five years, respectively, are $225, $207, $243.80, $219.50 and $227. The Dean is Louis de Lotbieniere Harwood. The Vice-Dean and director of studies is Telesphore Parizeau. The total registration for 1928-1929 was 274; graduates, 38. The next session begins Sept. 15, 1929, and ends June 15, 1930.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 50. The fees for each of the medical years are $160, $170, $160, $160 and $180. The course covers one premedical year, including preliminary courses in physics, chemistry and biology, and five medical years. The Dean is Dr. Arthur Rousseau, Quebec. Total registration for 1928-1929 was 258; graduates, 33. The next session begins Sept. 10, 1929, and ends in June, 1930.

HOSPITAL INTERN YEAR

Required by Medical Colleges

Eleven medical colleges have adopted the requirements of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the years when the requirement became effective for matriculants and graduates are as follows:

	Affects Matriculants	Affects Graduates
University of Minnesota Medical School	1910-11	1915
Stanford University School of Medicine	1914-15	1919
Rush Medical College (University of Chicago)	1914-15	1919
University of California Medical School	1914-15	1919
Marquette University School of Medicine	1915-16	1920
Northwestern University Medical School	1915-16	1920
University of Illinois College of Medicine	1917-18	1922
Loyola University School of Medicine	1917-18	1922
Detroit College of Medicine and Surgery	1919-20	1924
University of Cincinnati College of Medicine	1922-23	1923
College of Medical Evangelists	1922-23	1927

Required by Licensing Boards

The hospital intern year has been adopted as an essential qualification for the license to practice in thirteen states, becoming effective in different years, as follows:

State Board of	Affects Student Matriculants	Affects All Applicants
Pennsylvania	1909-10	1914
New Jersey	1911-12	1916
Alaska	1912-13	1917
Rhode Island	1913-14	1918
North Dakota	1913-14	1918
Washington	1914-15	1919
Michigan	1917-18	1922
Illinois	1918-19	1923
Delaware	1919-20	1924
Iowa	1919-20	1924
South Dakota	1920-21	1925
Utah	1921-22	1926
Wisconsin	1922-23	1927

The requirements both by medical schools and by state boards are overwhelming if not unanimously for the rotation service in general hospitals.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are 15 units of high school work and two years (60 semester hours) of college work.

CURRICULUM: The entire course of four years shall consist of not less than 3,600 hours, and shall be grouped in divisions and subdivided into subjects, each division to be allotted approximately the time, on a percentage basis, as shown in the following schedule:

1. Anatomy, including embryology and histology	14	–18¼%
2. Physiology	4½	– 6 %
3. Biochemistry	3½	– 4½%
4. Pathology, bacteriology and immunology	10	–13 %
5. Pharmacology	4	– 5 %
6. Hygiene and sanitation	3	– 4 %
7. General medicine (neurology and psychiatry, pediatrics, dermatology and syphilis)	20	–26½%
8. General surgery (orthopedic surgery, urology, ophthalmology, otolaryngology, roentgenology)	13	–17½%
9. Obstetrics and gynecology	4	– 5 %
	76	– 100%
Electives	24	– 0 %

MEMBERS OF ASSOCIATION

University of Alabama School of Medicine.
College of Medical Evangelists.
Stanford University School of Medicine.
University of California Medical School.
McGill University Faculty of Medicine.
University of Manitoba Faculty of Medicine.
University of Toronto Faculty of Medicine.
University of Colorado School of Medicine.
Yale University School of Medicine.
Georgetown University School of Medicine.
George Washington University Medical School.
Howard University School of Medicine.
Army Medical School.
Navy Medical School.
Emory University School of Medicine.
University of Georgia Medical Department.
Loyola University School of Medicine.
Northwestern University Medical School.
University of Chicago (Rush).
University of Illinois College of Medicine.
Indiana University School of Medicine.
State University of Iowa College of Medicine.
University of Kansas School of Medicine.
University of Louisville School of Medicine.
Tulane University of Louisiana School of Medicine.
Johns Hopkins University School of Medicine.
University of Maryland School of Medicine and College of Physicians and Surgeons.
Boston University School of Medicine.
Harvard University Medical School.
Tufts College Medical School.
Detroit College of Medicine and Surgery.
University of Michigan Medical School.
University of Minnesota Graduate School of Medicine.
University of Minnesota Medical School.
University of Mississippi School of Medicine.
St. Louis University School of Medicine.
University of Missouri School of Medicine.
Washington University School of Medicine.
Creighton University School of Medicine.
University of Nebraska College of Medicine.
Dartmouth Medical College.
Albany Medical College.
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Long Island College Hospital.
New York Homeopathic Medical College.
New York Post-Graduate Medical School and Hospital.
Syracuse University College of Medicine.
University and Bellevue Hospital Medical College.
University of Buffalo Medical Department.
University of North Carolina School of Medicine.
Wake Forest College School of Medicine.
University of North Dakota School of Medicine.
Ohio State University College of Medicine.
University of Cincinnati College of Medicine.
Western Reserve University School of Medicine.
University of Oklahoma School of Medicine.
University of Oregon Medical School.
Hahnemann Medical College and Hospital.
Jefferson Medical College.
University of Pennsylvania Graduate School of Medicine.
University of Pennsylvania School of Medicine.
University of Pittsburgh School of Medicine.
Woman's Medical College of Pennsylvania.
University of the Philippines College of Medicine and Surgery.
Medical College of the State of South Carolina.
University of South Dakota College of Medicine.
Meharry Medical College.
University of Tennessee College of Medicine.
Vanderbilt University School of Medicine.
Baylor University College of Medicine.
University of Texas School of Medicine.
University of Vermont College of Medicine.
Medical College of Virginia.
University of Virginia Department of Medicine.
West Virginia University School of Medicine.
Marquette University School of Medicine.
University of Wisconsin Medical School.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 25 East Washington Street, Chicago.

FOREIGN MEDICAL COLLEGES

The following list gives names of 321 bona fide medical schools in all countries outside the United States. The foreign spelling of most names is retained so they may be identified with the names appearing on foreign medical diplomas. The educational requirements of 27 foreign countries and the United States are shown on the accompanying chart. Graduation from European secondary schools usually qualifies for two years' advanced standing in college courses in the United States leading to the baccalaureate degree. Educational standards of American medical schools are now considered on a par with those abroad.

AFRICA

Cape Town, Union of South Africa.—University of Cape Town Faculty of Medicine.
Johannesburg, Union of South Africa.—University of the Witwatersrand Medical School.

ALGERIA

Algiers.—University of Algiers, Faculty of Medicine and Pharmacy.

ARGENTINE REPUBLIC

Buenos Aires.—Universidad Nacional de Buenos Aires, Facultad de Ciencias Medicas (National University of Buenos Aires Faculty of Medical Sciences).
Cordova.—Universidad Nacional de Cordoba, Facultad de Ciencias Medicas (National University of Cordova Faculty of Medical Sciences).
La Plata.—Universidad Nacional de la Plata, Escuela de Ciencias Medicas (La Plata School of Medical Sciences, National University).
Rosario.—Universidad Nacional del Litoral, Facultad de Ciencias Medicas (National Arts University Faculty of Medical Sciences).

AUSTRALIA

Adelaide.—University of Adelaide Faculty of Medicine.
Melbourne.—University of Melbourne Medical School.
Sydney.—University of Sydney Medical School.

AUSTRIA

Graz.—Medizinische Fakultät der Karl-Franzens-Universität (Karl Franzens University Faculty of Medicine).
Innsbruck, Tyrol.—Medizinische Fakultät der Leopold-Franzens-Universität (Leopold Franzens University Faculty of Medicine).
Vienna.—Medizinische Fakultät der Universität Wien (University of Vienna Faculty of Medicine).

BELGIUM

Brussels.—Faculté de Medecine de l'Université de Bruxelles (University of Brussels Faculty of Medicine).
Ghent.—Université de Gand Faculté de Medicine (University of Ghent Faculty of Medicine).
Liege.—Université de Liege (Belgique) Faculté de Medecine (University of Liege Faculty of Medicine).
Louvain.—Université Catholique de Louvain Faculté de Medecine (Catholic University of Louvain Faculty of Medicine).

BOLIVIA

La Paz.—Universidad Mayor de San Andrés Facultad de Ciencias Medicas (also known as University of La Paz).
Sucre.—Facultad de Medicina de la Universidad Mayor de San Francisco Xavier (also known as University of Sucre).

BRAZIL

Bahia.—Faculdade de Medicina da Bahia (Faculty of Medicine of Bahia).
Bello Horizonte, Minas.—Faculdade de Medicina (Faculty of Medicine).
Curytiba, Parana.—Faculdade de Medicina do Parana (Faculty of Medicine of Parana).
Porto Alegre, Rio Grande do Sul.—Faculdade de Medicina de Porto Alegre.
Porto Alegre, Rio Grande do Sul.—Faculdade de Medicina Homeopathia (Faculty of Homeopathic Medicine).
Rio de Janiero.—Faculdade de Medicina Homeopathia (Faculty of Homeopathic Medicine).
Rio de Janiero.—Universidade de Rio de Janeiro Faculdade de Medicina, Cirurgia e Pharmacia (University of Rio de Janeiro Faculty of Medicine, Surgery and Pharmacy).
Sao Paulo.—Faculdade de Medicine de Sao Paulo (Faculty of Medicine of Sao Paulo).

BULGARIA

Sofia.—Université de Sofia Faculté de Medecine (University of Sofia Faculty of Medicine).

CHILE

Concepcion.—Universidad de Concepcion.
Santiago.—Universidad de Chile Escuela de Medicina (University of Chile School of Medicine).

CHINA

Canton, Kwangtung.—Chung-Fa Medical College.
Canton, Kwangtung.—First Chung Shan University Medical School.
Canton, Kwangtung.—Franco-Chinese Medical School.
Canton, Kwangtung.—Hackett Medical College for Women.
Canton, Kwangtung.—Kuang Hua Medical College.
Canton, Kwangtung.—Kuang Ta Medical College.
Canton, Kwangtung.—South China Medical College.
Canton, Kwangtung.—Women's Medical College and School of Midwifery.
Changsha, Hunan.—Hunan-Yale College of Medicine.
Chengtu, Szechuan.—French School of Medicine.
Chengtu, Szechuan.—West China Union University School of Medicine.
Foochow, Fukien.—Union Medical College.
Hangchow, Chekiang.—Hangchow Medical Training College.
Hangchow, Chekiang.—Third Chung Shan University Medical School.
Hongkong, Kwangtung.—University of Hongkong Faculty of Medicine.
Kweiyang, Kweichow.—Kweichow Provincial Medical College.
Mukden, Manchuria.—Manchuria Medical College.
Mukden, Manchuria.—Mukden Medical College.
Nanchang, Kiangsi.—Kiangsi Provincial Medical College.
Nanking, Kiangsi.—East China Union Medical College.
Nantung, Kiangsu.—University of Nantung College of Medicine.
Nantungchow, Kiangsu.—Nantung Private Medical College.
Peiping, Chihli.—Army Medical College.
Peiping, Chihli.—National University of Peking Medical Department.
Peiping, Chihli.—Peking Union Medical College.
Shanghai, Kiangsu.—Dun Dai Medical College.
Shanghai, Kiangsu.—French School of Medicine (Aurora University).
Shanghai, Kiangsu.—Pennsylvania Medical School (Medical Department of St. John's University).
Shanghai, Kiangsu.—Shanghai Hospital Medical School.
Shanghai, Kiangsu.—Shen Chow Medical School.
Shanghai (Woosung), Kiangsu.—Tung Chi University Medical Department.
Shanghai, Kiangsu.—Tungtee Medical School.
Shanghai, Kiangsu.—Women's Union Christian Medical College.
Soochow, Kiangsu.—Kiangsu University College of Medicine.
Taiyuan, Shansi.—Shansi Provincial Medical College.
Tientsin, Chihli.—Naval Medical College.
Tsinanfu, Shantung.—Shantung Christian University School of Medicine.
Tsinanfu, Shangtung.—Shantung Provincial Medical College.
Wuchang, Hupeh.—Hupeh Provincial Medical College.
Yunnan, Yunnan.—Yunnan Army Medical College.

COLOMBIA, SOUTH AMERICA

Bogota.—Universidad Nacional Facultad de Medicina y Ciencias Naturales (National University Faculty of Medicine and Natural Sciences).
Cartagena.—Facultad de Medicina de la Universidad de Cartagena (University of Cartagena Faculty of Medicine).
Medellin.—Universidad de Antioquia Facultad de Medicina y Ciencias Naturales (University of Antioquia Faculty of Medicine and Natural Sciences).

CUBA

Havana.—Universidad de la Habana Facultad de Medicina y Farmacia (University of Havana Faculty of Medicine and Pharmacy).

CZECHOSLOVAKIA

Bratislava.—Universita Komenskeho Fakulta Lekarska (Komensky, or Comenian, University Faculty of Medicine).
Brno.—Masarykova Universita.
Prague.—Karlova Universita Lekarska Fakulta (Charles University Faculty of Medicine).
Prague.—Deutsche Universität Medizinische Fakultät (German University of Prague Faculty of Medicine).

DENMARK

Copenhagen.—Kjobenhavns Universitet (University of Copenhagen Faculty of Medicine).

DOMINICAN REPUBLIC

Santo Domingo.—University of the Dominican Republic Faculty of Medicine and Natural Sciences.

ECUADOR

Cuenca.—Universidad del Azuay Facultad de Medicina.
Guayaquil.—Universidad del Guayas Facultad de Medicina.
Quito.—Universidad Central del Ecuador Facultad de Medicina (Central University of Ecuador Faculty of Medicine).

EGYPT

Cairo.—Egyptian University Faculty of Medicine.
Khartoum, Anglo-Egyptian-Sudan.—Kitchener School of Medicine.

ENGLAND

Birmingham.—University of Birmingham.
Bristol.—University of Bristol.
Cambridge.—University of Cambridge.
Leeds.—University of Leeds.
Liverpool.—University of Liverpool.
London.—University of London (including the following Medical Schools: Charing Cross Hospital, Guy's Hospital, King's College Hospital, London Hospital, London (Royal Free Hospital) School of Medicine for Women, Middlesex Hospital, St. Bartholomew's Hospital, St. George's Hospital, St. Mary's Hospital, St. Thomas's Hospital, University College Hospital, Westminster Hospital.
Manchester.—Manchester University.
Newcastle-upon-Tyne.—Durham University.
Oxford.—University of Oxford.
Sheffield.—University of Sheffield.

ESTHONIA

Tartu (formerly Dorpat or Jurjev).—University of Tartu Faculty of Medicine.

FINLAND

Helsingfors.—Helsingfors Universitet (University of Helsingfors).

FRANCE

Bordeaux.—Université de Bordeaux Faculté de Medecine et de Pharmacie (University of Bordeaux Faculty of Medicine and Pharmacy).
Lille.—Faculté Mixté de Medecine et de Pharmacie de Lille (Faculty of Medicine and Pharmacy of Lille).
Lyons.—Faculté de Medecine et de Pharmacie de l'Université de Lyons (University of Lyons Faculty of Medicine and Pharmacy).
Montpellier.—Université de Montpellier Faculté de Medecine (University of Montpellier Faculty of Medicine).
Nancy.—Faculté de Medecine de Nancy (Faculty of Medicine of Nancy).
Paris.—Faculté de Medecine de l'Université de Paris (University of Paris Faculty of Medicine).
Strasbourg.—Université de Strasbourg (University of Strasbourg).
Toulouse.—Faculté Mixté de Medecine et de Pharmacie de l'Université de Toulouse (University of Toulouse Faculty of Medicine and Pharmacy).

FRENCH WEST AFRICA

Dakar, Senegal.—Ecole de Medecine Indigène.

GERMANY

Berlin, Prussia.—Friedrich-Wilhelms Universität (also known as University of Berlin).
Bonn, Prussia.—Rheinische-Friedrich-Wilhelms Universität, Medizinische Fakultät (also known as University of Bonn).
Breslau, Prussia.—Schlesische-Friedrich-Wilhelms Universität Medizinische Fakultät (also known as University of Breslau).
Erlangen, Bavaria.—Friedrich-Alexanders Universität (also known as University of Erlangen).

Frankfort-on-Main, Germany. — Medizinische Fakultät der Universität Frankfort-am-Main.
Freiburg (Breisgau), Baden.—Albert-Ludwigs Universität Medizinische Fakultät (also known as University of Freiburg).
Giessen, Hesse.—Hessische-Ludwigs Universität Medizinische Fakultät (also known as University of Giessen).
Göttingen, Prussia.—Georg-August Universität Medizinische Fakultät (also known as University of Göttingen).
Greifswald, Prussia.—Medizinische Fakultät der Universität Greifswald (also known as University of Greifswald).
Halle-on-the-Saale, Prussia.—Medizinische Fakultät der Universität Halle on der Saale (also known as University of Halle).
Hamburg, Germany.—Hamburgische Universität Medizinische Fakultät.
Heidelberg, Baden.—Universität Heidelberg Medizinische Fakultät (Badische Ruprecht-Karls Universität).
Jena, Thuringia.—Thuringische Landesuniversität Medizinische Fakultät (also known as University of Jena).
Kiel, Prussia.—Christian-Albrechts Universität Medizinische Fakultät (also known as University of Kiel).
Köln (Cologne).—Medizinische Fakultät der Universität Köln.
Königsberg, Prussia. — Albertus-Universität Medizinische Fakultät.
Leipzig, Saxony.—Medizinische Fakultät der Universität Leipzig.
Marburg, Prussia. — Marburg Universität Medizinische Fakultät (Philipps-Universität).
Munich, Bavaria. — Universität Munchen Medizinische Fakultät.
Munster, Westphalia.—Westfaelische Wilhelms Universität.
Rostock, Mecklenburg.—Medizinische Fakultät der Universität Rostock.
Tübingen, Wurttemburg.—Eberhard-Karls Universität (also known as University of Tubingen).
Würzburg, Bavaria.—Medizinische Fakultät der Julius-Maximilians Universität (also known as University of Wurzburg).

GREECE

Athens.—University of Athens School of Medicine.

GUATEMALA

Guatemala.—Universidad Nacional Facultad de Medicina y Cirurgia (National University Faculty of Medicine and Surgery).

HAITI

Port-au-Prince.—Ecole Nationale de Medecine et de Pharmacie (National School of Medicine and Pharmacy).

HONDURAS

Tegucigalpa.—Universidad Central de la Republica de Honduras Facultad de Medicina, Cirurgia y Farmacia (Central University of the Republic of Honduras Faculty of Medicine, Surgery and Pharmacy).

HUNGARY

Budapest.—Királyi Magyar Pázmány Peter Tudományegyetem Orvosi Fakultasa (Medical Faculty of the Royal Hungarian University Petrus Pázmány) (also known as University of Budapest).
Debrecen.—Magyar Királyi Tisza-István-Tudományegyetem (Medical Faculty of the Royal Hungarian Stephen Tisza University) (also known as University of Debrecen).
Pecs.—Magyar Királyi Erzsébet Tudományegytem (Royal Hungarian Elizabeth University Faculty of Medicine).
Szeged.—Magyar Királyi Ferencz-József Tudományegyetem Orvostudomanyi Kara (Royal Hungarian Francis-Joseph University Faculty of Medicine) (also known as University of Szeged).

ICELAND

Reykjavik.—Laeknadeild Háskóla Islands (University of Iceland School of Medicine).

INDIA

Bombay.—University of Bombay, Grant Medical College.
Bombay.—University of Bombay, Seth Gordhandas Sunderdas Medical College.
Calcutta.—University of Calcutta, Medical College of Bengal.
Calcutta. — University of Calcutta, Carmichael Medical College.
Delhi.—Lady Hardinge Medical College for Women (one of the affiliated colleges of the University of the Punjab).
Lahore.—University of the Punjab, King Edward Medical College.
Lucknow.—Lucknow University, King George's Medical College (formerly Allahabad University Medical Department).
Madras.—University of Madras Medical College.
Mysore.—Mysore University (Mysore Medical College).
Patna. — Patna University (Prince of Wales Medical College).
Rangoon.—Rangoon University (University College).
Vizagapatam, Madras Presidency.—Vizagapatam Medical College (one of the affiliated colleges of Andhra University).
Colombo, Ceylon.—Ceylon Medical College.

IRAQ (MESOPOTAMIA)

Bagdad.—Al-Al Beit University of Bagdad (Iraq College of Medicine).

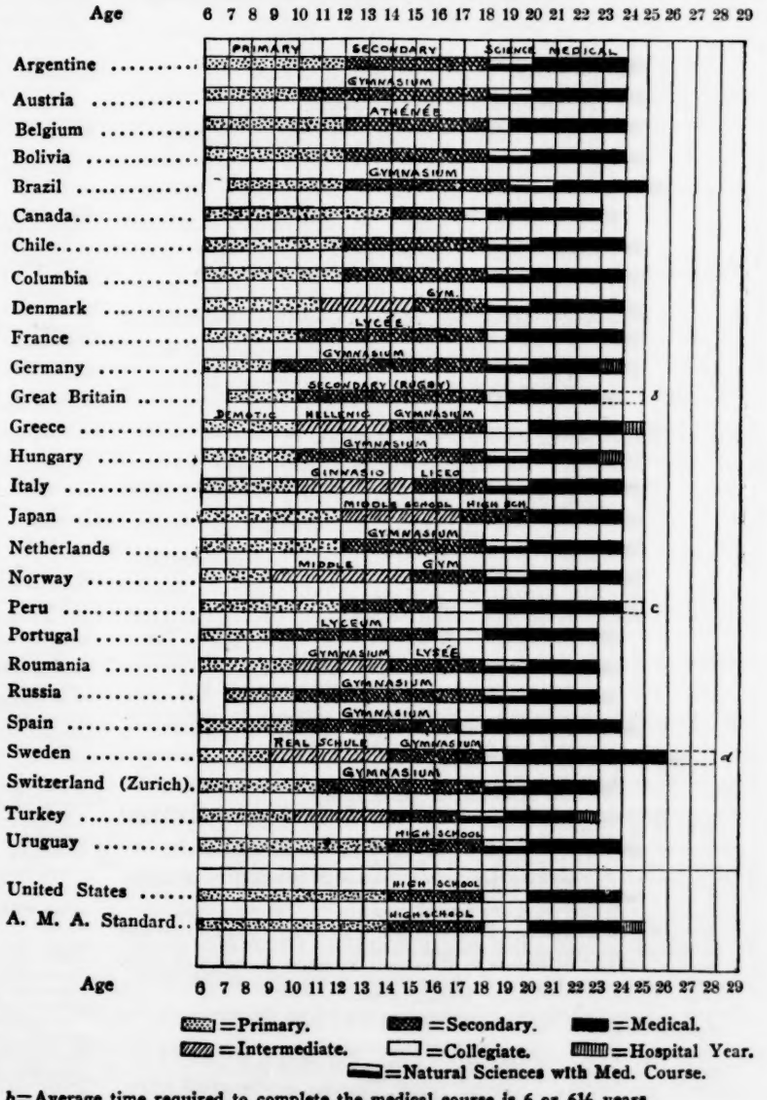
IRELAND

Belfast.—Queen's University.
Dublin.—National University of Ireland (including University College, Dublin; University College, Cork; University College, Galway).
Dublin.—University of Dublin School of Physic, Trinity College.
Dublin.—Schools of Surgery, Royal College of Surgeons in Ireland.

ITALY

Bari.—Universita di Bari.
Bologna.—Regia Universita di Bologna Facolta di Medicina e Chirurgia (Royal University of Bologna Faculty of Medicine and Surgery).
Cagliari.—Facolta di Medicina e Chirurgia della Regia Universita di Cagliari (Royal University of Cagliari Faculty of Medicine and Surgery).
Catania.—Facolta di Medicina e Chirurgia della Regia Universita di Catania (Royal University of Catania Faculty of Medicine).
Florence.—Facolta di Medicina e Chirurgia della Regia Universita di Firenze (Royal University of Florence Faculty of Medicine and Surgery).
Genoa.—Facolta di Medicina e Chirurgia della Regia Universita di Genova (Royal University of Genoa Faculty of Medicine and Surgery).
Messina.—Facolta di Medicina e Chirurgia della Regia Universita di Messina (Royal University of Messina Faculty of Medicine and Surgery).
Milan.—Facolta di Medicina e Chirurgia della Regia Universita di Milano (Royal University of Milan Faculty of Medicine and Surgery).
Modena.—Facolta di Medicina e Chirurgia della Regia Universita di Modena (Royal University of Modena Faculty of Medicine and Surgery).

STANDARDS OF MEDICAL EDUCATION AT HOME AND ABROAD



b=Average time required to complete the medical course is 6 or 6½ years.
c=One report says medical course covers seven years.
d=Average time to complete medical course is 8 or 9 years.

Naples.—Facolta di Medicina e Chirurgia della Regia Universita di Napoli (Royal University of Naples Faculty of Medicine and Surgery).
Padua.—Facolta di Medecina e Chirurgia della Regia Universita di Padova (Royal University of Padua Faculty of Medicine and Surgery).
Palermo.—Facolta di Medicina e Chirurgia della Regia Universita di Palermo (Royal University of Palermo Faculty of Medicine and Surgery).
Parma.—Facolta di Medicina e Chirurgia della Regia Universita di Parma (Royal University of Parma Faculty of Medicine and Surgery).
Pavia.—Facolta di Medicina e Chirurgia della Regia Universita di Pavia (Royal University of Pavia Faculty of Medicine and Surgery).
Perugia.—Facolta di Medicina e Chirurgia della Regia Universita di Perugia (Royal University of Perugia Faculty of Medicine and Surgery).
Pisa.—Facolta di Medicina e Chirurgia della Regia Universita di Pisa (Royal University of Pisa Faculty of Medicine and Surgery).
Rome.—Facolta di Medicina e Chirurgia della Regia Universita di Roma (Royal University of Rome Faculty of Medicine and Surgery).
Sassari.—Facolta di Medicina e Chirurgia della Regia Universita di Sassari (Royal University of Sassari Faculty of Medicine and Surgery).

Siena.—Facolta di Medicina e Chirurgia della Regia Universita di Siena (Royal University of Siena Faculty of Medicine and Surgery).
Turin.—Facolta di Medicina e Chirurgia della Regia Universita di Torino (Royal University of Turin Faculty of Medicine and Surgery).

JAPAN

Chiba.—Chiba Medical College.
Fukuoka.—Kyushu Imperial University Medical Faculty.
Kanazawa.—Kanazawa Medical College.
Keijo (Seoul) Chosen.—Keijo Imperial University Medical Faculty.
Keijo (Seoul) Chosen.—Keijo Medical College.
Kumamoto.—Kumamoto Medical College.
Kurume.—Kyushiu Medical College.
Kyoto.—Kyoto Imperial University Medical College.
Kyoto.—Kyoto Medical College.
Morioka.—Iwate Medical College.
Nagasaki.—Nagasaki Medical College.
Nagoya.—Aichi Medical College.
Niigata.—Niigata University of Medicine.
Ohmori (near Tokyo).—Teikoku Women's Medical College.
Okayama.—Okayama Medical School.
Osaka.—Osaka Medical College.
Osaka.—Osaka Women's Special Medical School.
Osaka.—Osaka Special Medical School.
Sapporo.—Hokkaido Imperial University Faculty of Medicine.
Sendai.—Tohoku Imperial University Faculty of Medicine.
Taihoku, Formosa.—Taihoku Government Medical College.
Tokyo.—Keio Gijiku University Faculty of Medicine.
Tokyo.—Nippon Ikadaigaku Special Medical College.
Tokyo.—Nippon Medical School.
Tokyo.—Nippon Daigaku (Medical Department of Nippon University).
Tokyo.—Tokyo Imperial University Faculty of Medicine.
Tokyo.—Tokyo Jikeikwai Medical College.
Tokyo.—Showa Medical College.
Tokyo.—Tokyo Women's Medical College.

JAVA

Sourabaya.—Nederlandsch-Indische Artsen-School.
Weltevreden, Batavia.—Government Medical College of Batavia.

JUGOSLAVIA

Belgrade.—Medecinski Fakultet, Beogradskog Universiteta (University of Belgrade).
Laibach.—Medical Faculty of the Kingdom of the Serbs, Croats and Slovenes in Laibach.
Zagreb (Agram).—Medical Faculty of the Serbs, Croats and Slovenes in Zagreb.

LATVIA

Riga.—University of Latvia Faculty of Medicine.

LITHUANIA

Kaunas (Kovno).—Lietuvos Universitetas, Medicinas Fakultetas (University of Lithuania Faculty of Medicine).

MADAGASCAR

Tananarive.—Ecole de Médecine Indigène.

MALAYA

(Federated Malay States)
Singapore.—King Edward VII College of Medicine.

MALTA

Valletta, Malta.—University of Malta Medical School.

MEXICO

Jalisco, Guadalajara.—Escuela de Medicina y de Farmacia de Guadalajara.
Merida, Yucatan.—Escuela de Medicina y de Farmacia de Yucatan.
Mexico City.—Escuela Libre de Homeopatia.
Mexico City.—Escuela Medico Militar.
Mexico City.—Universidad Nacional Facultad de Medicina.
Monterrey.—Escuela de Medicina de Nuevo Leon.
Morelia, Michoácan.—Universidad Michocana de San Nicholás de Hidalgo Facultad de Medicina.
Oaxaca.—Escuela de Medicina.
Puebla.—Escuela de Medicina y de Farmacia.
San Luis Potosi.—Instituto Literario y Cientifico (Escuela de Medicina de San Louis Potosi).

NETHERLANDS

Amsterdam.—Geneeskundige Faculteit der Universiteit Van Amsterdam (University of Amsterdam Medical Faculty).
Groningen.—Rijks-Universiteit te Groningen Medische Faculteit (University of Groningen Faculty of Medicine).
Leiden.—University of Leiden Medical Faculty.
Utrecht.—Rijks-Universiteit Medische Faculteit (Rijks University Faculty of Medicine).

NEW ZEALAND

Dunedin.—University of New Zealand, Otago Medical School.

NICARAGUA

Leon.—Universidad de Nicaragua Facultad de Medicina (University of Nicaragua Faculty of Medicine).

NORWAY

Oslo (formerly Christiania).—Kongelige Frederiks Universitet Mediciniske Fakultet (King Fredericks University Faculty of Medicine).

PARAGUAY

Asuncion.—Universidad Nacional del Paraguay Facultad de Ciencias Medicas (National University of Paraguay Faculty of Medical Sciences).

PERU

Lima.—Universidad Mayor de San Marcos de Lima Facultad de Medicina.

POLAND

Cracow.—Medical Faculty of Jagiellonic University (Wydzial Lekarski Universytetu Jagiell) (Formerly in Austria.)
Lemberg (Lwow).—Johann-Kasmir University Faculty of Medicine. (Formerly in Austria.)
Poznan.—University of Poznan Faculty of Medicine.
Warsaw.—University of Warsaw Faculty of Medicine.

PORTUGAL

Coimbra.—Universidade de Coimbra Faculdade de Medicina (University of Coimbra Faculty of Medicine).
Lisbon.—Universidade de Lisboa Faculdade de Medicina (University of Lisbon Faculty of Medicine).
Oporto.—Universidade do Porto Faculdade de Medicina (University of Portugal Faculty of Medicine).

ROUMANIA

Bucarest.—Universitatea din Bucuresti Facultatea de Medicina (University of Bucarest School of Medicine).
Cluj.—King Ferdinand I University Faculty of Medicine (also known as Universitatea din Cluj Facultatea de Medicina).
Iassy.—Universitatea din Iassi Facultatea de Medicina (University of Iassy School of Medicine).

RUSSIA

See Union of Socialistic Soviet Republics.

SALVADOR

San Salvador.—University of San Salvador.

SCOTLAND

Aberdeen.—University of Aberdeen Faculty of Medicine.
Dundee.—University of St. Andrews Conjoint Medical School, St. Andrews and Dundee.
Edinburgh.—University of Edinburgh Faculty of Medicine.
Edinburgh.—School of Medicine of the Royal Colleges.
Glasgow.—University of Glasgow Medical Faculty.
Glasgow.—Anderson College of Medicine.
Glasgow.—St. Mungo's College (the Medical School of the Glasgow Royal Infirmary).

SIAM

Bangkok.—Chulalankarana University Faculty of Medicine.

SOUTH AFRICA, UNION OF

See Africa.

SPAIN

Barcelona.—University of Barcelona Faculty of Medicine.
Cadiz.—Facultad de Medicina (Faculty of Medicine), (controlled by the University of Seville).
Granada.—University of Granada Faculty of Medicine.
Madrid.—Universidad Central de España (Central University of Spain Faculty of Medicine).
Salamanca.—University of Salamanca Faculty of Medicine.
Santiago.—University of Santiago Faculty of Medicine.
Saragossa.—Universidad de Zaragoza Facultad de Medicina (University of Saragossa Faculty of Medicine).
Valencia.—University of Valencia Faculty of Medicine.
Valladolid.—Universidad Literaria de Valladolid Facultad de Medicina (University of Valladolid Faculty of Medicine).

SWEDEN

Lund.—Kungl. Universitet i Lund Medicinska Fakulteten (Royal University of Lund Medical Faculty).
Stockholm.—Kungl. Karolinska Mediko-Kirurgiska Institutet (Royal Karolinska Institute of Medicine and Surgery).
Uppsala.—Kungl. Universitetet i Uppsala Medicinska Fakulteten (Royal University of Uppsala Faculty of Medicine).

SWITZERLAND

Basel.—Medizinische Facultät der Universität Basel (University of Basel Medical Faculty).
Berne.—Medizinische Facultät der Universität Bern (University of Berne Faculty of Medicine).
Geneva.—Faculté de Medecine de l'Université de Genève (University of Geneva Faculty of Medicine).
Lausanne.—Faculté de Medecine de l'Université de Lausanne (University of Lausanne Faculty of Medicine).
Neuchatel.—University of Neuchatel.
Zurich.—Zurich Universität Medizinische Fakultät (University of Zurich Faculty of Medicine).

SYRIA

Beirut, Lebanon.—American University of Beirut School of Medicine.
Beirut, Lebanon.—Faculté Française de Medecine et de Pharmacie de l'Université de St. Joseph (French Faculty of Medicine and Pharmacy of the University of St. Joseph).
Damascus.—Faculté Arabe de Medicine (a part of the Université Syrienne).

TURKEY

Constantinople.—University of Stamboul Faculty of Medicine.

UNION OF SOCIALISTIC SOVIET REPUBLICS

Astrachan.—State Medical Lunacarskij Institute.
Baku.—State University of Azerbejdzan Faculty of Medicine.
Dnipropetrovsk (Ekaterinoslav), Ukraine.—Ekaterinoslav Medical Institute.
Erivan, Armenia.—State University of the Armenian Soviet Republic Faculty of Medicine.
Irkutsk, Siberia.—State University of Irkutsk Faculty of Medicine.
Kazan.—State University of Kazan Faculty of Medicine.
Kharkov, Ukraine.—University of Kharkov (Charkovsky Universitet).
Kiev, Ukraine.—Dragomanov Institute (State Institute of Medicine in Kiev).
Krasnodar (Ekaterinodar).—Krasnodar Institute of Medicine.
Leningrad.—Medical Institute of Leningrad.
Leningrad.—State Institute of Medical Science.
Moscow.—Moscow State University Faculty of Medicine.
Odessa, Ukraine.—Odessa State Medical Institute.
Rostov-on-the-Don.—North Caucasian State University Faculty of Medicine.
Saratov.—State University of Saratov Faculty of Medicine.
Smolensk.—Medical Faculty of the Government University.
Tashkent, Turkestan.—State University of Tashkent Faculty of Medicine.
Tomsk, Western Siberia.—University of Tomsk Faculty of Medicine.
Voronej.—Voronej Government University Faculty of Medicine.

URUGUAY

Montevideo.—Facultad de Medicina de Montevideo (University of Montevideo Faculty of Medicine).

VENEZUELA

Merida.—Universidad de Merida Facultad de Medicina (University of Merida Faculty of Medicine).

WALES

Cardiff, South Wales.—Welsh National School of Medicine (controlled by the University of Wales).

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SATURDAY, AUGUST 17, 1929

MEDICAL EDUCATION IN THE UNITED STATES

This week for the twenty-ninth year THE JOURNAL publishes statistics regarding medical education in the United States. During these years medical education has shown a remarkable improvement over conditions that existed in 1901. Since 1905 the collection and presentation of the reports on medical education have been in charge of the Council on Medical Education and Hospitals.

NO NATIONAL LEGAL CONTROL OF MEDICAL EDUCATION

The Constitution of the United States made no provision for federal control over education but left such matters to the police powers of the several states. With a few exceptions, these did not establish supervision over the chartering of educational institutions. As a result, medical schools multiplied much more rapidly than the increase in population required. By 1900, as shown in chart 2,[1] the United States had 160 medical colleges, or about one-half the world's supply.

THE MEDICAL PROFESSION REGULATES ITS OWN AFFAIRS

In the absence of legal control, the function of regulating medical education naturally rested with that portion of the public in best position to recognize what should be done—the medical profession through its national body, the American Medical Association. Following its organization in 1847, through several investigations on separate occasions, the deplorable conditions in medical education were reported and resolutions adopted suggesting improvements. With the reorganization of the American Medical Association in 1902, a House of Delegates was created to look after the business affairs and general policies of the association. Among its first acts the House of Delegates appointed several standing committees or councils, one of which, the Council on Medical Education, was instructed to work directly for improvements in medical education. The Council began a series of annual conferences at which standards of both preliminary and medical education were presented and given discussion. During the college year of 1906-1907, an inspection of all medical schools was completed and the Council's first classification of medical schools was prepared. From the beginning of its work, the Council had a sincere cooperation from the deans of all the better medical schools. The improvements made were both rapid and remarkable. Where two or more institutions were found in each of a score or more cities, the inspectors urged that these schools merge, thereby forming a single but better equipped institution. In this way the number of medical schools was gradually reduced until now, instead of 160, only seventy-five recognized medical schools remain. From the beginning of its work the Council has always received a hearty cooperation from the medical schools and the medical profession of Canada. It is noteworthy that in this, the twenty-fifth year of the Council's work, all medical schools both of the United States and of Canada have finally completed the essential improvements whereby the class A rating has been given.

WORK OF THE CARNEGIE FOUNDATION

It should be clearly understood that the work of improving medical education in the United States was initiated by the organized medical profession in an effort to "put its own house in order." Following the completion of its first inspection of medical schools in 1907, and in order to secure the widest possible publicity regarding the needs of medical education, the Council appealed to the president of the Carnegie Foundation for the Advancement of Teaching that a special investigation be made by that organization. During the session of 1909-1910, therefore, a second tour of inspection was made jointly by Mr. Abraham Flexner and the secretary of the Council, which resulted in the notable report of 1910. It will be recalled, however, that the foundation made no classification of medical schools nor did it suggest any standards, these matters being continued as the work of the Council on Medical Education and Hospitals.

REQUIREMENTS OF PREMEDICAL EDUCATION

Prior to 1914, the minimum requirement for admission to medical schools fixed by the Council on Medical Education was a four year high school education. In 1914, however, the requirement was increased to one year and, in 1918, to two years of college work, including courses in physics, chemistry and biology. No higher requirement has ever been advocated by the Council. On the contrary, the Council requested that the minimum standard of premedical education required for the license to practice medicine be not advanced beyond two years of college work. Of course, it was right for a medical school to establish such entrance requirements as it saw fit and for a student to obtain more than two years of college work if he had the time,

1. Chart 2, this issue, p. 530.

money and inclination to do so. It was believed, however, that the requirements should not be made so high that students of unusual qualifications who had completed with reasonably high grades the two years of prerequisite college work in physics, chemistry and biology would be prevented from entering on the practice of medicine.

STUDENT ENROLMENTS IN MEDICAL SCHOOLS

The lowest ebb in the enrolment of medical students was in 1919, a decrease which was expected because of the smaller number of medical schools and the higher admission requirements. Since 1919, however, in spite of the changed conditions in medical education, the enrolments of medical students have constantly increased, until this year 20,876 students were enrolled. Through the limitation of enrolments, the higher entrance requirements, the increased number of better qualified teachers and the greater supply of clinical material, these students have secured a much broader medical training.

MEDICAL GRADUATES

The numbers of graduates have fluctuated in the same manner as the enrolments of medical students. The lowest number was 2,529 who graduated in 1922—the war class made up of students who matriculated in 1918. Since then, the number graduating each year has increased until this year it reached 4,446, the largest number of graduates since 1910.

Until 1915, the improvements in medical schools were largely in the laboratory division, through the employment of better teachers, the securing of improved laboratories and improved methods of instruction. Since 1915, however, in its inspections of medical colleges, the Council has laid stress on the need of improvements in clinical teaching and the securing of more clinical material, whereby students could obtain more experience in the examination, diagnosis and treatment of patients.

OPPORTUNITIES FOR INTERN TRAINING

As late as 1915 there were not enough hospitals willing to use interns to provide places for the students then graduating. Since 1915, however, the hospitals seeking interns have increased in both number and capacity and the demand for interns exceeds the supply. At present, therefore, about 95 per cent of all graduates secure internships, most of them voluntarily since only eleven medical schools require the completion of an internship as a qualification for graduation. Meanwhile, the chief value of this requirement comes in the closer supervision which the medical schools maintain over the hospitals in which the students secure their intern training.

A BROADER MEDICAL EDUCATION

Medical education now extends far beyond the bounds of the undergraduate medical school, which teaches the young physician how to study and gets him started on the way. Thereafter, his education is continued in other institutions. A hospital internship at present is taken by about 95 per cent of all graduates in medicine. In 1927, 2,336 students secured additional graduate work in the forty-one approved graduate medical schools and 1,136 others served as residents in the 272 hospitals approved for further training directed toward specialization. As the member of some hospital staff, the young physician can obtain further training, not only through his own experience in the hospital but also through the hospital staff conferences, hospital reports regarding danger-line cases and reports on necropsies of patients who have died in the hospital.

CLINICAL AND RADIOLOGIC LABORATORIES

In addition to the medical education now available in the several medical and surgical specialties, more physicians are now specializing in the fields of clinical and radiologic laboratory work. With the amazing development of hospitals in the last few decades there has been an increasing demand for physicians who have become proficient in the fields of pathology and radiology. No better example of the tremendous growth of medical science, generally, can be obtained than to note how radiology has developed from the small Crookes' x-ray tubes that were used in 1895 to the large, highly efficient and powerful tubes now in use. No hospital at present is considered properly equipped unless it has a large, well arranged radiologic laboratory.

Nowhere can the broad extent of present-day medical practice be better ascertained than by visiting a modern, well planned hospital and noting the multiplicity of its departments, the extent of its equipment, the care used in the securing of histories, the completeness of its records, and the careful check of its routine work as brought out in its staff conferences and in the use of the many modern methods that are now found to be of value in the care of the sick or the injured.

THE ACTION OF DIGITALIS IN HEART FAILURE

During a century and a half, digitalis has been used in heart disease by many physicians. The value of the drug for slowing the ventricles in auricular fibrillation is now well understood. When heart failure is not associated with a rapid and irregular pulse, digitalis may not produce such striking improvement as in auricular fibrillation. Chronic circulatory failure has been considered to include as essential features a slowing of the blood stream and a diminished cardiac output. Therefore, clinicians have generally accepted the pharmacologic evidence that digitalis causes a more vigorous and larger ventricular contraction. Goading an animal or a muscle is not likely to improve its condition, and it is difficult to accept the view that a muscle such as the heart, which cannot rest after being overstimulated, is improved by being forced to beat

harder. This difficulty has been cleared up to some extent by the work from Starling's laboratory at University College, London. There it was shown [1] that the efficiency of the heart, or its capacity for doing a fixed amount of work with least oxygen consumption, varies inversely with its diastolic volume. It was shown further [2] that digitalis causes the heart to decrease its diastolic volume while carrying a constant load. Thus, digitalis reduces the energy requirement of the heart or permits it to do more work with the same expenditure of energy. Only when the heart is working under the handicap of overloading does digitalis produce an increase in cardiac output. If it has not reached its maximal capacity for work, digitalis enables it to carry its load with smaller consumption of fuel. This type of tonic action can only be beneficial and is quite different from "whipping up the heart."

The exact changes in the circulation and tissues that occur in heart failure are not clearly defined. It has been urged that increased cardiac output may occur with heart failure or be the principal feature of certain types, and this is in line with the observation that marked arterial hypertension may be maintained until death. Most of the evidence now at hand indicates that the rate of flow through the lungs [3] is slowed in heart failure and that the cardiac output is diminished. Digitalis tends to restore these conditions to normal [4] if present methods of study can be accepted as indicating the qualitative changes in the circulation, even though inadequate to measure the exact amount of variation in cardiac output in disease.

It is now generally believed that digitalis diminishes the cardiac output of normal human subjects and of normal mammals. Kaufmann, in 1884, and Tigerstedt twenty years later, observed this reduction in cardiac output and related it to the peripheral vasoconstriction produced by digitalis. These observations have been confirmed and extended by recent observations.[5] The action of digitalis on the peripheral vessels, causing diminished blood flow, is less marked in man than in some experimental animals, for the decrease in output of normal subjects probably does not exceed 20 per cent.[6] Whether a similar change, which would tend to reduce the work of the heart, occurs in digitalized patients with heart disease is not known. It is probably less important than the effect of digitalis on cardiac efficiency and may be without significance in therapeusis.

1. Starling, E. H., and Visscher, M. B.: The Regulation of the Energy Output of the Heart, J. Physiol. **62**: 243 (Jan.) 1927.

2. Bodo, R.: The Effect of "Heart Tonics" and Other Drugs on the Heart Tone and Coronary Circulation, J. Physiol. **64**: 365 (Feb.) 1928.

3. Weiss, Soma; and Blumgart, H. L.: The Effect of Digitalis Bodies on the Velocity of Blood Flow Through the Lungs and on the Other Aspects of the Circulation, J. Clin. Investigation **8**: 11, 1929.

4. Kininmonth, J. G.: The Circulation Rate in Some Pathologic States, with Observations on the Effect of Digitalis, Quart. J. Med. **21**: 277 (Jan.) 1928. Lauter, S., and Baumann, H.: Zur Theorie der Herzinsuffienz und der Digitaliswirkung, Klin. Wchnschr. **8**: 263, 1929.

5. Dock, William; and Tainter, M. L.: The Circulatory Changes Following Full Therapeutic Doses of Digitalis, Proc. Soc. Exper. Biol. & Med. **25**: 524 (March) 1929.

6. Burwell, C. S.; Neighbors, DeWitt; and Regen, E. M.: The Effect of Digitalis on the Pulse Rate and Circulatory Minute Volume of Normal Human Subjects, J. Clin. Investigation **4**: 431 (Aug.) 1927.

THE SEVENTIETH BIRTHDAY ANNIVERSARY OF THEOBALD SMITH

Anniversaries play an important part in national life as they do in one's personal experiences. They serve not only to arouse retrospect and encourage a review of what has gone before, but also to awaken an interest in the impending possibilities of the future. The experience of the past tends in no small measure to kindle new enthusiasms for what coming years may reveal, or to dampen an ardor for plans and projects that history has indicated to be futile or unlikely to be accomplished. It has become customary to select the centennial anniversary of the accomplishment of some notable purpose or the birth of a distinguished person for the celebration of achievement and the review of its significance and bearing on progress. It seems equally fitting at times to refer to significant contributions before their consequences have become so familiar that the merits of the maker are all but forgotten.

The seventieth birthday anniversary of Theobald Smith, at the time of his announced retirement from the active directorship of the Department of Animal Pathology of the Rockefeller Institute at Princeton, N. J., affords a welcomed opportunity to hail one of the eminent American contributors to the advancement of science and the development of medicine. The demonstration of the existence of insect vectors in the transmission of disease—a phenomenon that the medical student of today, only a generation after the epoch-making discovery, accepts without debate or hesitation—marked Smith as one of those rare pioneers who sense great opportunities, who see what others have persistently failed to observe, and who have the strength and courage to give force to their convictions.

A popular writer has remarked that it was Theobald Smith who made mankind turn a corner. "He was the first, and remains the captain of American microbe hunters," showing men an entirely new and fantastic way in which a disease may be carried—by an insect. It is fortunate as indeed it is gratifying that with the progress of popular education the significance of such a discovery may today be thoroughly appreciated by thinking people and that they may share in expressions of congratulation and the heralding of well deserved honors. Thus, in reviewing the achievement of the unostentatious investigator on the scientist's birthday, the New York *Times* has offered this editorial tribute:

> A world accustomed to accept such facts as the communication of disease by insects can scarcely appreciate the significance of Dr. Smith's discovery in 1893 of the transmission of the so-called Texas fever of cattle from one animal to another by means of ticks. For seven years he had been experimenting with this disease, and discovered that it could be carried even by ticks which had never been in contact with infected cattle but which had acquired the virus from their parents. This opened up an entire new field of thought and lent moral courage to those who made the test which finally proved that

yellow fever was transmissible by certain types of mosquitoes. In like manner the connection between the spread of malaria and mosquitoes was discovered, and between sleeping sickness and the tsetse fly.

Dr. Smith's achievements are by no means completely covered by reference to his studies of Texas fever in cattle and all that this implies. He was among the earliest students of the phenomena that are now designated by the comprehensive term anaphylaxis—mysterious manifestations that are concerned in the genesis and the control of many maladies of mankind. But this is not a review. American medicine—indeed, the scientific world and the layman as well—rejoice in recalling the part that Theobald Smith has played in the advancement of learning and the promotion of human and animal welfare.

Current Comment

STATE LICENSING BOARDS AND MEDICAL FRAUDS

The first statistics in regard to state medical licensure assembled by the American Medical Association were for the year 1903 and were published in THE JOURNAL, Aug. 13, 1904. Since 1905, these statistics have been compiled under the supervision of the Council on Medical Education and Hospitals. The first records were far from complete because some states kept no records whatever, and from others the information desired could not be obtained. Reports that could be published, therefore, were obtained from only thirty-two of the forty-eight states. Since then, however, records have been kept by an increasing number of boards, and the methods used in licensure have been improved so that in more recent years the publication of more complete information has been possible. Since 1918, indeed, complete reports have been received from all states. At the beginning of the Council's work, two separate confederations of state boards were well represented at the educational conferences. In 1912, through the mediation of the Council, the two confederations were merged into the present Federation of State Medical Boards. By 1915 the headquarters of the Council had become a central clearing house for information in regard to medical licensure. Beginning in that year also the *Federation Bulletin* has been published as a special means of disseminating to the members of all state boards information in regard to medical practice laws, methods of conducting examinations, and items relating to illegal practitioners, quacks, diploma mills and other frauds. In its files the Council has a practically complete list of bona fide physicians through which attention can promptly be directed to those who present spurious credentials. In its licensure statistics, the Council has frequently called attention to states in which safeguards have not been established or enforced against diploma mill rings and licensure frauds. During the last several years, Arkansas, Connecticut and Florida have been mentioned as wide open doors where those holding fraudulent degrees or licenses appeared to find easy entry. Early in 1922, before the exposure of the Missouri diploma mill ring, statistics were published in THE JOURNAL[1] which led to a housecleaning in Connecticut and resulted in the securing of legislation establishing stronger safeguards against the licensing of fraudulent or incompetent doctors. Two years ago Florida convicted and sentenced to jail Dr. George A. Munch, who for several years had been engaged in the sale of bogus medical diplomas and licenses in that state. This year Arkansas secured a basic science law, which is a step toward better licensing regulations in that state. Since 1918, uncertainty in regard to medical licensure in Illinois developed with the activities of W. H. H. Miller, then director of the department of registration and education. According to available reports, he is at present under suspicion of being the head of a ring engaged in the wholesale vending of bogus diplomas and licenses. Illinois is now apparently the place of last resort for diploma venders and fraudulent practitioners who have been refused consideration in other states. Unless the present unsavory conditions in Illinois are promptly cleared up, reciprocal relations in medical licensure with other states will be seriously jeopardized. How long will Illinois continue to occupy this unenviable position?

SPLITTING OF FEES

At the last annual session of the American Medical Association, on recommendation of the Judicial Council, the Principles of Medical Ethics of the Association was amended so that Section 3, Article VI, Chapter II, was made to read as follows:

COMMISSIONS

SEC. 3.—When a patient is referred by one physician to another for consultation or for treatment, whether the physician in charge accompanies the patient or not, it is unethical to give or to receive a commission by whatever term it may be called or under any guise or pretext whatsoever.

The language of this statement is so explicit that it needs no elaboration or elucidation; it attacks directly a specific evasion of the direct statement that fee splitting shall be unethical by mentioning specifically the nature of that evasion. Moreover, it is broad enough to include any other evasion of the principle that may occur to the agile mind of any commercially minded physician who may wish to evade it. That it will cure the fee-splitter of his practice is perhaps too much to expect, since legislation, and even strict enforcement, have not done away with other evils of the body politic. Where ideals and morals are absent, and where the conscience speaks in a voice so still and small that its possessor seldom hears it, enunciation of principles cannot work a cure. Such statements do serve, however, to bring before the bar of medical opinion those who refuse to abide by them, to permit their divorcement from fellowship in medical organization with their colleagues, and to cast public shame on those who attempt to veil in secrecy practices that are pernicious to the public good.

1. Statistics of the State Board Examinations, editorial, J. A. M. A. 80: 1242 (April 28) 1923.

Association News

MEDICAL BROADCAST FOR THE WEEK

The American Medical Association Morning Health Talks and Evening Health Hints from Hygeia

The American Medical Association broadcasts daily at 11:15 in the morning, central daylight saving time, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week of August 19-24 is as follows:

August 19. "Carpets and Draperies," by Dr. R. G. Leland.
August 20. "Have You Fitted Your Child for School?" by Dr. John M. Dodson.
August 21. "How Does Cigaret Smoking Affect the Boy?" by Dr. John M. Dodson.
August 22. "'Patent Medicines' and the Pure Food Law," by Dr. Arthur J. Cramp.
August 23. "The Dangers of Sunlight," by Mr. H. J. Holmquest.
August 24. "Selection and Care of Kitchen Equipment," by Dr. R. G. Leland.

Evening Health Hints from Hygeia, 8 o'Clock Central Daylight Saving Time

August 19. Safety Not a Police Problem.
August 20. Examinations Before Marriage.
August 21. Fighters of Fate.
August 22. Barber Shop Sanitation.
August 23. Salt and Rhubarb.
August 24. Shampoos for Children.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Special Meetings.—The Calhoun County Medical Society, Anniston, was addressed at a special meeting, July 29, by Dr. Charles J. Bloom, professor of pediatrics, Tulane University of Louisiana Graduate School of Medicine, on "Various Phases of Vomiting."——The Talladega County Medical Society has invited members of contiguous county societies to a special meeting, September 3, which, preceding a banquet, will be addressed by Drs. Adrian S. Taylor, Birmingham, on "The Present Status of Brain Surgery" and Stonewall J. Gay, Lineville, on "Reminiscences of Saddle Bags and Horses."

CALIFORNIA

Four Die of Mussel Poisoning.—It is reported that four persons in the San Francisco Bay region died August 5 and 6 of the effects of mussel or clam poisoning, and that others were seriously ill. The clams are said to have been taken from Tomales Bay (THE JOURNAL, August 10, p. 463).

Difficulties in Regulating the Chinese Herbalists.—For at least fifteen years the state board of medical examiners has been investigating the Chinese herbalists of California, some of whom have no medical training whatever. The board of examiners, in attempting to make them comply with the medical practice act, always finds that the Chinese herbalists have attorneys who advise them how far they can go without running foul of the law. The board has found it extremely difficult to have the proper officials connected with certain newspapers identify the herbalists as the persons who contracted for and paid for advertising in their papers. The board has had difficulty with the telephone company in endeavoring to keep from the classified list of physicians in the directory the names of certain herbalists. Difficulties have been encountered in the courts in endeavoring to convict Chinese herbalists in spite of the testimony of patients that herbalists treated them.

Garbage Disposal Long Ago.—About 6 million cubic feet of bones, shells and refuse, forming a mound in the San Francisco Bay region, has been leveled off. This material is said to be the accumulation of an extinct Indian tribe which dumped there the bones and other refuse from the fowl and animal life which they obtained as food. The University of California was invited to study the mound as it was being demolished. W. C. Schenck, collector of the department of anthropology, estimated that a thousand years was required to make the mound. In its demolition, 6,700 specimens of bird bones were recovered and most of them were identified as specimens of ducks and geese and cormorants. The Indian tribe has left altogether about 400 shell mounds or refuse-built camp sites. The demolished mound was on the site of Shellmound Park, one of the early amusement resorts established in the bay region.

COLORADO

Licenses Revoked.—The Colorado State Board of Medical Examiners at a meeting in Denver, July 2, revoked the license of Dr. Benjamin F. Replogle, Fort Collins, on the charge of abortion. The license of Dr. Jasper C. Holland, Nederland, was also revoked for unlawful possession of narcotic drugs. The license of Osteopath Albert C. Fawkes, Salida, was revoked, he having served a term in the federal prison at Leavenworth, Kan., for unlawful possession of narcotic drugs.

Dr. Work Returns to Denver.—Dr. Hubert Work, founder of Woodcroft Hospital at Pueblo, will return to Colorado and have offices with his son, Dr. Philip Work, in Denver. Dr. Work has been in Washington for several years, serving as postmaster general and secretary of the interior, and more recently as chairman of the national republican committee. He was a member of the House of Delegates of the American Medical Association for years, and President of the Association in 1921.

State Medical Meeting at Greeley, September 3-5.—The fifty-ninth annual session of the Colorado State Medical Society will be held at Greeley, September 3-5. Drs. Harold E. Robertson, Mayo Clinic, Rochester, Minn., will speak on "Some of the Newer Aspects of Carcinoma"; John B. Carnett, professor of surgery, University of Pennsylvania graduate school of medicine, Philadelphia, on "Differentiation of Intra-Abdominal Lesions and Intercostal Neuralgia of the Abdominal Wall"; Florence R. Sabin, Rockefeller Institute for Medical Research, New York, "Action of the Lipoids from the Tubercle Bacillus in Producing Tubercles"; William G. Lennox, Newton, Mass., research fellow at Harvard, "Recent Studies in Epilepsy"; Earl H. Bruns, medical corps, U. S. Army, "Air Embolism as a Complication in Artificial Pneumothorax Therapy," and Prof. Charles Richet, Paris, France, "Food Allergy." Dr. Gerald B. Webb, Colorado Springs, will exhibit the Harvey film which was prepared by the Royal College of Physicians of London for the tercentenary of Harvey. There will be a symposium on syphilis and a symposium on acidosis by Colorado physicians and by Dr. Alexis F. Hartmann, Washington University School of Medicine, St. Louis. The house of delegates will meet in the Little Theater of the Colorado State Teachers' College. Wives of the members are cordially invited, and there will be special entertainment for them in addition to golfing, swimming, athletic events, and luncheons and dinners on what *Colorado Medicine* calls the most beautiful campus in the state.

ILLINOIS

State Alienist Appointed.—Governor Emmerson has appointed Dr. Sidney D. Wilgus proprietor of a sanatorium in Rockford, as state alienist for four years to succeed Dr. Alexander S. Hershfield of Chicago. Dr. Wilgus was formerly superintendent of the state hospitals at Elgin and Kankakee.

Malaria in Central Illinois.—Three cases of malaria were reported, recently, in Decatur and two in Springfield; in the latter the patients had visited in Decatur a short while before becoming ill. These cases were first suspected of being typhoid. Their true nature was established with the aid of the microscope. Malaria had not been recognized previously in central Illinois for years.

Personal.—Dr. Sumner N. Miller has been appointed head of the medical staff and Dr. Argal E. Hubbard as superintendent in charge of the Peoria Municipal Tuberculosis Sanitarium.——Dr. Sandor Horwitz, health commissioner of Peoria, was guest of honor at a dinner given by the Fellowship Club of Peoria Physicians, July 10, previous to his departure for an extended trip in Europe.——Dr. May I. Millbrook, Biwabik, Minn., has been appointed medical adviser to women at the University of Illinois and assistant in hygiene.——Dr. Robert M. Sutton is the tennis champion of Peoria County, according to the *Bulletin* of the Peoria Medical Society.——Dr. James N. Buchanan has been appointed health officer of Freeport to succeed the late Dr. Elmer H. Best.——Dr. Hubert H. Fletcher, Winchester, has taken up the duties of managing officer of

the Illinois Soldiers' and Sailors' Home at Quincy.——An oil painting of the late Dr. Daniel M. Ottis is to be presented to St. John's Hospital, Springfield. The portrait was painted by Thomas Lockie of Pontiac.——Dr. Emil K. H. Oelke, Wheaton, won the annual Du Page County Medical Society Golf Tournament, in which twenty-two physicians participated.——Dr. and Mrs. Warren E. Taylor, Moline, celebrated their golden wedding anniversary, August 5. Dr. Taylor formerly was superintendent of the East Moline State Hospital.——Dr. George D. Heath, Jr., formerly health commissioner of Bloomington, has been appointed health officer of Florence, S. C., succeeding the late Dr. Percy H. Brigham.

Chicago

Study of Chicago's Cacophony.—A survey to determine how the cacophony that pervades the business districts of Chicago may be reduced is being made for the Chicago Surface Lines by Prof. John K. Tuthill of the electrical engineering department of the University of Illinois. He is spending about three months conducting experiments in the city to determine the intensity of noise and what may be done to street cars particularly to make their operation less morbid.

Suit for Plagiarism.—Dr. Emmet A. Printy, director of the Laboratory of Surgical Technique and editor of "Surgical Technique," has instituted suit in the U. S. District Court of New York against Dr. George Schwartz, New York, and the Dartmouth Press, Inc., for damages under the copyright law, claiming plagiarism in connection with the latter's book entitled "Illustrated Operative Surgery," which was copyrighted in 1928. It is claimed that about sixty-two of the illustrations in "Illustrated Operative Surgery" were taken from Dr. Printy's book, which was copyrighted in 1925. An injunction was granted, March 26, by Judge Mack in the southern district of New York, enjoining Dr. Schwartz and the Dartmouth Press from further printing or distributing "Illustrated Operative Surgery."

Miller, Blaine, Goldstein, Barron and Torbert Indicted.—True bills were voted by a grand jury, July 30, naming five men as members of a gang that sold licenses to applicants who were not properly qualified to practice medicine. Those indicted are reported to be: W. H. H. Miller, former director of the state department of education and registration; L. Mitchell Blaine, who posed as a physician; Harry Goldstein, alias Senator Browski, of Springfield; Albert Barron, a prospect finder, and John Torbert. The evidence has been accumulated by Pat Roche, chief investigator, and special investigator Williams, for the state's attorney's office. The witnesses were Robert Adcox of St. Louis, who was sentenced a few years ago for his diploma mill activities. Adcox told the jury that Miller, who met him and Blaine and numerous prospects in St. Louis, boasted of the hundreds of licenses he had obtained for unqualified applicants. Miller was fired from the state department of education and registration, a few years ago, and fined on charges of selling licenses and examination questions, but according to Adcox he claimed to have as much influence in the department as before he was ousted. Ludolph Bollmeier, St. Louis, whose license was revoked in Connecticut in 1923 along with many others after a special grand jury investigation, told the jury that after several meetings with Miller and Adcox he agreed to pay $2,000 for a license. He took the "examination" in a St. Louis hotel room where Blaine and Miller met him. William Stahlman of St. Louis testified that he paid Goldstein $2,400 for a license. A printer in Springfield told the state's attorney, after several hours' questioning, that Goldstein came to his plant to have a photostatic copy made of a license, and that he sent the plates to an engraver in Terre Haute. Later Barron came to him with what seemed genuine diplomas from Rush Medical College and Northwestern University Medical School, and an intern's certificate from Cook County Hospital. He made photostatic copies of these and sent the plates to the Terre Haute engraver. These plates are supposed to have been thrown in the drainage canal after Barron was arrested and released on bond. Two forged seals of local universities alleged to have been used by this gang have been recovered by divers from Lake Michigan near the Navy Pier. Evidence at hand is said to indicate that more than 1,000 fake licenses have been issued. Investigator Roche and Clyde I. Backus of the department of education and registration have been making an investigation of all licenses issued during the last several years. Dr. Mark P. Abrams, Chicago, told investigator Roche, the Chicago *Tribune* says, that he made the down payment on an automobile purchased by Miller's son-in-law, but denied this was in exchange for help in getting a license. The first arrest resulting from this phase of the investigation was that of Sam Sparber, 1309 South Kedzie Avenue, August 12, who is said to have obtained one of the fake licenses for $1,500. Sparber was found working as an orderly at the West End Hospital. He is said to have had prescriptions signed by "Dr. Sam Sparber" and a blank abortion release slip in his pocket.

INDIANA

Child Hygiene Institute.—The state board of health conducted its annual child hygiene institute at Winona Lake, July 15-19, during which 141 babies and preschool children were examined. The educational program included motion pictures, exhibits, maps, models, copies of *Hygeia* for distribution, demonstrations of first aid and habit training, and lectures. About 2,500 people saw the health films.

Personal.—Dr. John W. Iddings, Crown Point, was recently appointed by Governor Leslie a member of the state board of health for a term of four years. Dr. Amos J. Hostetler, Lagrange, was elected president of the board at a reorganization meeting, July 10, and Dr. Cavins R. Marshall, Indianapolis, vice president.——Dr. Harold Herman Ash, Reynolds, has been elected health officer of White County to succeed Dr. Elbridge G. Recker who, the Logansport *Press* says, disappeared July 8. ——Dr. Henry S. Leonard was elected president of the board of health of Indianapolis at the annual meeting, July 30, succeeding Dr. Frederick E. Jackson. Dr. Herman G. Morgan was reappointed secretary of the board, and Dr. William A. Doeppers, superintendent of the city hospital.

Graduate Instruction in Tuberculosis.—All licensed physicians in the state are invited to attend a two-day course in the diagnosis and treatment of tuberculosis arranged by the Indiana Tuberculosis Association with the cooperation of members of the faculty of the state university and other specialists. The instruction will include laboratory demonstrations, physical examinations and clinics. It will be given at the Lake County Tuberculosis Sanitarium, Crown Point, August 29-30; Boehne Tuberculosis Hospital, Evansville, September 5-6; Sunnyside Sanitorium, Oaklandon, September 12-13; Irene Byron Sanitorium, Fort Wayne, October 2-3; Healthwin Sanatorium, South Bend, October 8-9, and Indiana State Sanatorium, Rockville, October 15-16. There will be no charge.

LOUISIANA

Hospital Beds Allocated to Medical School.—Five hundred beds in the Charity Hospital, New Orleans, were allocated for the exclusive use of the Tulane School of Medicine at a meeting of the board of directors, August 1. The medical school has been depending on faculty members for service in the hospital for study. These beds have been scattered throughout the buildings; now, says Dr. Charles C. Bass, dean of the medical school, they will be concentrated in groups. The hospital and patients will benefit by the arrangement as more efficient service will be possible.

Orleans Parish Medical Society.—Last year was one of the most active years in the history of this society. There was a gross gain of seventeen members, making the total 515 and leaving in the whole parish less than fifty nonmembers who are eligible. Before the seventeen general meetings, twenty-three scientific papers were presented by members and five by guests. The average attendance at these meetings was 107. The society cooperated with civic and other community organizations. An especially good arrangement is the plan to have a home in the new clinic building of Tulane University of Louisiana School of Medicine and the correlation of the libraries of these two institutions. The board of directors met eleven times during the year; new furniture was provided for the library, and a history of the fifty years of its existence was sanctioned and is now almost complete. The secretary making the annual report was Dr. Henry Theodore Simon, New Orleans.

MASSACHUSETTS

Society News.—At a meeting of the Plymouth County Medical Society at the Jordan Hospital, Plymouth, July 18, Drs. John D. Adams read a paper on "Some Modern Conceptions of Arthritis"; Cadis Phipps, "Coronary Sclerosis"; James C. White, Boston, "New Methods of Diagnosis in Circulatory Conditions," and John S. Hodgson, "Diagnostic Methods in Brain and Spinal Cord Conditions." The society adjourned then to the Pilgrim House for dinner. In the afternoon, Dr. Reuben Peterson, professor of obstetrics and gynecology, University of Michigan Medical School, Ann Arbor, who is spending the summer at Duxbury, addressed the society, as did Dr. Francis D. Donoghue of the Industrial Accident Board, and Dr. George H. Bigelow, state commissioner of health.

Report on Boston City Hospital.—The committee appointed by the mayor to conduct an investigation of the Boston City Hospital has made a twenty-seven page report, signed by Drs. Frederic A. Washburn and Joseph B. Howland of Boston, and Haven Emerson, New York. In its recommendations, the committee said that the Boston City Hospital is an excellent public institution, deserving the affection and confidence in which it is held by the public. Its organization, however, has not kept pace with the increase in the work of the institution. The committee recommends that the board of trustees, the medical staff, and the administrative staff be reorganized; that the main city hospital be not increased beyond 2,000 beds, and that a hospital for chronic sick be built in the immediate vicinity of the hospital, and a hospital for convalescent patients at the West Roxbury site, sufficient of the site being reserved for a new general hospital to be built when needed. It was recommended that the East Boston Relief Hospital and Convalescent Home in Dorchester be abandoned. A director of hospitals should be appointed by the trustees and he should be a physician free of routine duties The committee found that the hospital was overcrowded, especially in the children's department. Ward rooms to a considerable extent are used for private patients of members of the staff, whereas they are urgently needed for the care of dangerously ill, disturbed, noisy, troublesome and otherwise difficult patients who should not be kept in the general wards. The committee said that if it is considered desirable to have private patients of the staff treated at the hospital, they should be in a building erected for this purpose and so built and operated that the care of these patients does not become a burden on the taxpayers. This investigation was conducted after a special committee of the city council had reported on the hospital.

MICHIGAN

Postgraduate Society's Meeting.—The International Assembly of the Inter-State Post-Graduate Medical Association of North America will take place in Detroit, October 21-25. The usual contributions appear on the program.

Society News.—Dr. John W. Towey has been made president of the Michigan Sanatorium Association. The next annual meeting will be in Powers, where he is superintendent of the Delta, Menominee and Dickinson counties sanatorium.——Dr. Dorsey W. Patterson has resigned as city physician of Port Huron.——The Fulton County Medical Society of Ohio and the Lenawee County Medical Society of Michigan held a joint meeting recently at Morenci. Dr. Stuart Pritchard, Battle Creek, gave an address on "Early Diagnosis of Pulmonary Tuberculosis."——The University of Michigan Hospital has recently constructed a special storage room for its roentgen-ray films which is 100 feet or more from the hospital proper.

MINNESOTA

New Fellows.—The following physicians have been assigned as fellows of the Mayo Foundation, Rochester, and will major in medicine: Drs. George G. Burkley, Pittsburgh; John W. Harmeier, Pittsburgh; Oren L. Kirklin, Gaston, Ind.; John B. Morey, Buffalo, and Martin Patmos, Hudsonville, Mich. Drs. Samuel L. Goldberg, Chicago, and George W. Waldron, Rochester, will major in surgery; Dr. Charles J. Zinn, Germantown, Pa., orthopedics; Dr. Alfonso de la Pena, Madrid, Spain, urology, Dr. Roynold N. Berke, St. Paul, ophthalmology, and Drs. Ralph E. Miller, Hanover, N. H., and Harold C. Thornton, Ferrum, Va., pathology.

Personal.—Governor Christianson has reappointed Arthur E. Allen, D.O., Minneapolis, and Dr. Samuel H. Boyer, Duluth, members of the state board of examiners in the basic sciences, their terms to expire in 1935. Dr. Alfred W. Adson, Rochester, has been appointed a member of the board for a term of seven years to succeed Dr. Leon A. Barney, Duluth, whose term has expired.——Drs. Charles H. and William J. Mayo, Rochester, were awarded the honorary degrees of doctor of laws by the University of Manchester, England, July 24. A window in the Eccles Parish Church of Manchester, England, was dedicated, July 25, in memory of the late Dr. William W. Mayo, father of Drs. Charles and William J. Mayo.——Prof. Torsten L. Thunberg, director of the physiologic institute, University of Lund, Sweden, lectured at Rochester, July 25, on "Dehydrogenases: Their Uses in Biochemical Analysis."——Dr. Halbert L. Dunn, associate professor of biometry and vital statistics, Johns Hopkins University School of Hygiene and Public Health, Baltimore, has joined the staff of the Mayo Clinic for work in biometrics.

MISSISSIPPI

Society News.—The DeSoto County Medical Society will be addressed at the September meeting by Drs. William S. Weissinger, Hernando, on "Obstetrics in 1869," and C. W. Emerson, Hernando, on "Obstetrics in 1929."——The Issaquena-Sharkey-Warren Counties Medical Society, Vicksburg, was addressed, July 9, by Drs. Augustus Street, Vicksburg, on "'Some Interesting Bone Tumors" and Ewing F. Howard on "Acute Sinusitis."——Dr. Harvey F. Garrison, who has been appointed assistant director of the Jones county health unit at Laurel, will be in charge for several weeks during the absence of Dr. Hardie R. Hays on account of illness.——Dr. Robert W. Smith, Canton, has been appointed health officer for Madison County.——Dr. Paul S. Carley, Belzoni, resigned as health officer to accept a position in Jamaica, and has been succeeded by Dr. Walter W. Scott, Jackson.

NEW YORK

Health at Albany.—Telegraphic reports to the U. S. Department of Commerce from sixty-two cities with a total population of about 29,000,000, for the week ending August 3, indicate that the highest mortality rate (19.5) for that period was for Albany and Nashville, Tenn., and that the mortality rate for the cities as a whole was 11.1. The mortality rate for Albany for the corresponding week last year was 18.2, and for the group of cities, 10.7. The mortality rate for Nashville for the corresponding week last year was 22.1. The annual rate for the sixty-two cities for the thirty-nine weeks of 1929 was 13.9, as against a rate of 13.5 for the corresponding weeks of 1928. Caution should be used in the interpretation of weekly statistics as they fluctuate widely. The facts that some cities are hospital centers for large areas outside the city limits or that they have a large negro population may tend to increase the death rate.

Commission to Study Old Age Dependents.—Governor Roosevelt will shortly appoint a commission, it is reported, to study the problem of old age dependency. The research department of the Welfare Council of New York City has sent the governor a report of its inquiry into the care of 1,795 old people outside of institutions. Of the aged men receiving support from private agencies, 67 per cent were married and of the dependent women, only 26 per cent were married. Fifty-four per cent of the women were widows and only 15 per cent of the men were widowers. Housewives and general laborers predominated, but there was a considerable proportion of persons who have been engaged in the professions, business and skilled labor. The welfare council estimated that 3,350 aged people outside of institutions are receiving financial assistance from private social agencies in the city, who are spending about $378,000 a year for their relief.

New York City

Society News.—The department of health had not approved any beaches on Jamaica Bay for bathing, July 29. These waters are perhaps the most polluted near the city.——There are now in operation about thirty hay-fever clinics in New York.——The new ten story building of the Lincoln School for Nurses was dedicated, June 19.——The thirty-three Cuban physicians who were on a hospital and clinic inspection tour of eastern cities were to have sailed for home, August 17.——More than 350 miles of ditches have been dug in the salt marshes owned by the city in the outlying boroughs to control mosquito breeding.

Neurologic Research Program.—On receipt of the final gift of $150,000 to complete payments on the new building of the Neurological Institute, the trustees and medical board approved a plan for a research program for which a campaign has been launched to raise $2,000,000. The research will embrace about sixty-five different subjects in psychiatry and neurology and it will be coordinated by a committee comprising Drs. Frederick Tilney, Charles A. Elsberg and Walter Timme. The board also authorized the publication of a journal for workers in the field of neurology and psychiatry and in allied fields, including members of the legal profession.

Dogs Increase Ten Per Cent—No Human Rabies This Year.—Although 7,000 dog bites were reported in the first half of this year, and eighty-seven of the dogs were rabid, no cases of human rabies developed. If this record continues it will be unusual, for in 1927 there were six cases of human rabies and two in 1928. The health department is endeavoring to stamp out rabies as has been done in England. The stray dog is the

worst offender. Dog owners are urgently requested to make adequate provision for all pets they no longer desire. Any unwanted dog will be called for and humanely destroyed for the sake of the dog and the community. Muzzling does not necessarily solve the problem, for some muzzles are not effective. The figure of eight muzzle is useless and a tight muzzle is cruel. A dog pants instead of perspiring and a muzzle therefore must be large enough to allow the dog to open his mouth. The muzzle must be of the cage variety completely covering the dog's face to be effective. Dogs are increasing, according to license figures for the city, at the rate of 10 per cent a year. The health commissioner asks all prospective dogs owners to consider carefully their ability to give a dog the care required before undertaking the obligation.

OHIO

Medical Library Convention.—The annual meeting of the American Medical Library Association will be held at the Allen Memorial Library, Cleveland, September 3-5 (THE JOURNAL, Nov. 13, 1926, p. 1655). The speakers will include Drs. Thomas Archibald Malloch, librarian of the New York Academy of Medicine; Morris Fishbein, Chicago, editor of THE JOURNAL; Irving S. Cutter, dean, Northwestern University Medical School, Chicago, and Carl H. Lenhart, Cleveland; Messrs. J. F. Ballard, Boston, W. G. Shules, Baltimore, and J. C. Harding, Cleveland, and Miss Louise Prouty, Cleveland. Entertainment will be provided by the Cleveland Medical Library Association.

Fewer Births.—In the first four months of this year, the infant mortality rate was 86.6 per thousand live births, much higher than in the corresponding period in 1928. During January, when the influenza was at its peak, the infant mortality rate was highest. Each day during the four months has seen seventeen fewer babies born in Ohio than in the corresponding period in 1928. Throughout the year 1928, eight fewer babies a day were reported born than throughout the year 1927. Part of the decline in the number of babies born last spring may be due, the department of health suggests, to the failure of physicians to report births promptly. The law requires that births be reported within ten days after they occur.

Conferences on Storage of Roentgen-Ray Films. — A series of conferences will be held under the auspices of the state department of industrial relations before the promulgation of a definite code of regulations to govern the storage of roentgen-ray films. The first conference, in Columbus, July 1, was attended by about forty persons representing the medical profession, hospitals, state departments, industrial organizations and building regulation departments. Permanent regulations will not be made effective until they have been considered at public hearings in various parts of the state. Recommendations formulated and approved by the division of safety and hygiene of the state industrial commission as to how films should be stored were published in the July issue of the *Ohio State Medical Journal*.

Society News.—The Adams County Medical Society, West Union, was addressed, June 12, by Dr. Levi H. Leonard, Manchester, on "Leukocythemia," and by Dr. Austin R. Quigley, Maysville, Ky., on "Acute Abdominal Conditions."——Dr. Lee C. Gatewood, Chicago, addressed the Academy of Medicine of Lima and Allen County, June 18, on "Diagnosis and Treatment of Colitis." —— The Medina County Medical Society was addressed, recently, at Evanon by Dr. Frank S. Gibson, Cleveland, on thyroid problems.——The annual outing of the Stark County Medical Society, at Canton, June 26, was featured by golf and cards.——There were forty-five counties in Ohio, January 1, which had whole-time health officers. This places the state in second place in that regard, Alabama heading the list. ——Smallpox in Ohio in the first five and one half months of this year doubled in incidence as compared with last year.—— Any one wanting a list of approved tourists' camps in Ohio may obtain it from the state department of health, Columbus.—— There were 5,155 more deaths in Ohio in the first three months of this year than in the corresponding months of last year.—— The August issue of the *Bulletin* of the Academy of Medicine of Cleveland was prepared by the division of health as a public health number.——Thirty members of the staff of Mount Sinai Hospital, Cleveland, recently spent the day attending clinics at St. Vincent's Hospital, Toledo.

WEST VIRGINIA

Society News. — Six county medical societies (Preston, Monongalia, Taylor, Marion, Barbour and Randolph) were guests of the Hopemont Tuberculosis Sanatorium near Terra Alta, July 8; Dr. Carl C. Yount and Dr. Edward J. McCague, both of the faculty of the University of Pittsburgh School of Medicine, spoke on "Preventing Deformities" and "Renal Tuberculosis," respectively. —— Dr. Edward B. Martin, Romney, addressed the Grant-Hardy-Hampshire-Mineral County Medical Society, July 12, on "Cystitis of the Aged," and Dr. Theodore C. Giffin, Keyser, on "Glandular Fever in Children." —— Dr. Frank F. Sowers has been appointed health officer of Marion County to succeed Dr. Howard M. Batson. Dr. Sowers will go to Indianola, Miss., to take a special course in public health work at the Rockefeller Foundation Training School and will take up his duties in Marion County, September 1. Dr. Batson has gone to New Mexico to locate.

GENERAL

Warning—Spurious Checks.—William Manella, who tells fanciful tales about his medical attainments but apparently fails to mention his prison record in California, is reported to have obtained a check book from the American National Bank of Glendale, California, which he is using "all over the country." Checks were last returned from Kingman, Ariz. Physicians should beware. He travels under the following aliases: Dr. F. B. Noble, Dr. Stone, Dr. M. Sepulbada, Dr. W. F. W. Hughes, Dr. Black, Dr. Manilla, Legaspe Williams and William Legaspe. He weighs about 130 pounds, is 65 inches tall, and speaks broken English.

Society News.—At the annual meeting of the American Bronchoscopic Society, in July, in San Francisco, Dr. Thomas E. Carmody, Denver, was made president and Dr. Louis H. Clerf, Philadelphia, secretary.——The United States Civil Service Commission announces that applications will be received until December 30 for the position of psychiatric social worker in government hospitals at an entrance salary of from $1,800 to $2,000 a year. Information may be obtained from the commission, Washington, D. C.——Dr. Arthur C. Jones, Boise, was elected president of the Pacific Coast Oto-ophthalmological Society at the seventeenth annual meeting in Salt Lake City, July 2. The next annual meeting will be in Victoria, B. C.

Cooperation.—It has been the policy of the U. S. Public Health Service for years to cooperate with official and unofficial bodies in matters pertaining to public health. The law specifically requires some of these cooperative activities and the others are considered necessary by the surgeon general in the interest of efficient administration. The public health service cooperated last year with the department of state in the examination of aliens before granting them visas, in the treatment of destitute seamen brought home from abroad, and in the administration of foreign quarantine regulations; with the department of commerce in the investigation of warning agents and commercial gas; in assisting in designing a sewage disposal system for the helium plant at Amarillo, Texas; in the investigation of the water supply at the Fisheries Biological Station, Fairport, Iowa; in the extension of the use of laboratory facilities at the Shellfish Research Laboratory, Craney Island, Norfolk, Va.; in the testing of screen doors for use in the studies on malaria control, and in various other ways. The public health service cooperated also with the departments of agriculture, interior, justice and labor, the U. S. Employees' Compensation Commission, and the civil service commission. The service also cooperated with all states in the union in the collection of reports on the prevalence of disease and in investigations relating to public health. It also cooperated with a number of cities and societies engaged in public health activities; for example, the American Red Cross, American Public Health Association, Epidemiologic Service of the League of Nations, the National Safety Council, and the International Institute of Statistics.

Traveling Expenses Again Held Deductible.—The board of tax appeals, in a decision promulgated June 7, again held that expenses incurred by a physician in attending medical meetings are deductible. *Roy Upham* v. *Commissioner*, Docket No. 16105. Dr. Upham, a practicing physician then of Brooklyn, as an officer in a state medical organization expended $750 during the year 1920 for traveling expenses in attending medical conventions and societies for which he was apparently not entitled to reimbursement. In 1921, he was vice president of a national scientific body and as such attended meetings of various societies and was an official delegate to a meeting in

Geneva, Switzerland. The traveling expenses paid by him in 1921 "amounted to or exceeded $3,000," for which he was entitled to reimbursement, but he claimed and received none. The amounts expended during 1920 and 1921 were claimed as deductible from gross income in his tax returns for those years but were disallowed by the commissioner of internal revenue. The board of tax appeals overruled the commissioner as to both years. With respect to 1920, the expenses were declared deductible as business expenses, under the decisions of the board in *Marion D. Shutter*, 2 B. T. A. 23; *Alexander Silverman*, 6 B. T. A. 1328; *Cecil M. Jack*, 13 B. T. A. 726, and *J. Bentley Squier*, 13 B. T. A. 1223. As to 1921, the board said that Dr. Upham was apparently entitled to reimbursement from the organization on behalf of which the expenses were incurred but that he claimed none, and the amounts expended were declared deductible as contributions to a corporation organized and operated exclusively for scientific or educational purposes, no part of the net earnings of which inured to the benefit of any private stockholder.

Ambiguous Labels on Medicinal Preparations. — The United States Court of Appeals for the Ninth Circuit has handed down a far-reaching decision affecting the statements used on labels of medicinal preparations. The decision was made on appeal from a judgment entered in the western district of Washington. Language used on labels which literally is not a statement of therapeutic properties but owing to attendant circumstances may be understood as such, brings the labels within the scope of the federal food and drugs act as definitely as if direct statements appeared. The lower court held that the labels to which the government objected did not make curative or therapeutic claims but merely gave reports indicating that physicians had obtained good results from the use of the nostrum. The lower court dismissed the libel. The court of appeals held that such language engendered a belief in possible buyers that the nostrum would afford relief. The court said, "Their contention is that they have such letters or reports and that that fact constitutes a competent defense, whatever may be the character of the drugs. But if, as is alleged, the drugs are worthless, the proprietors cannot escape responsibility by hiding behind the phrase 'the doctors say.'" The court held further that the principle of construction set forth by the Supreme Court in a case against vinegar brought under the food and drugs act is conclusive in this case also. The principle was:

> The statute is plain and direct. Its comprehensive terms condemn every statement, design and device which may mislead or deceive. Deception may result from the use of statements not technically false or which may be literally true. The aim of the statute is to prevent that resulting from indirection and ambiguity, as well as from statements which are false. It is not difficult to choose statements, designs and devices which will not deceive. Those which are ambiguous and liable to mislead should be read favorably to the accomplishment of the purpose of the act.

Government Services

New Public Health Officers

Nineteen physicians arrived at the U. S. Marine Hospital, New Orleans, July 1, to begin about a year of special training in public health work previous to taking up regular active duty in the service. The new health officers are: W. E. Anderson, University of Illinois; R. Barr, University of Minnesota; George W. Bolin, University of Texas; Clarence B. Brewster, Tulane University; Sidney Cooper, University of Cincinnati; Waldemar C. J. Dreessen, State University of Iowa; William B. Fulton, University of Pittsburgh; Richard O. C. Green, Vanderbilt University; Claude D. Head, Jr., University of Tennessee; John G. Hewitt, State University of Iowa; Noka B. Hon, Jr., Washington University; E. H. Krueger, University of Minnesota; Noble D. Leonard, University of Michigan; Charles G. McLean, Vanderbilt; Dana W. Nance, Vanderbilt; Edward J. Reneke, University of Tennessee; George E. Riley, University of Tennessee; Edward C. Rinck, University of Kansas, and David F. Sellers, Tulane.

On the same day the following physicians who have taken the work at this officers' training school, conducted by the U. S. Public Health Service, left for their stations as follows: Henry J. Brehm, Racine, Wis.; J. W. Bryan, U. S. Quarantine, Boston; J. W. Christie, Pontiac, Mich.; Joseph O. Dean, U. S. Quarantine, New Orleans; Raymond L. Evans, U. S. Marine Hospital, Mobile; Guy V. Gooding, Kinston, N. C.; Jacques P. Gray, Santa Rosa, Calif.; Walter P. Griffey, U. S. Marine Hospital, Stapleton, N. Y.; Oswald F. Hedley, U. S. Quarantine, New Orleans; K. R. Nelson, U. S. Marine Hospital, New Orleans; William F. Ossenfort, U. S. Marine Hospital, New Orleans; Ivan W. Steele, U. S. Marine Hospital, Boston; Cassius J. Van Slyke, U. S. Marine Hospital, Detroit; Russell S. Wolfe, Point Pleasant, W. Va., and James T. Jackson, U. S. Marine Hospital, New Orleans.

New Navy Medical Officers

The following have been commissioned as lieutenants, junior grade, in the medical corps of the navy and assigned to the stations indicated: Benjamin N. Ahl, San Diego, Calif.; O. Henry Alexander, Mare Island, Calif.; Lester L. Arntsen, Mare Island, Calif.; Branham B. Baughman, New York; Harold E. Beasley, Puget Sound, Wash.; Albert R. Behnke, Mare Island, Calif.; Carr E. Bentel, San Diego, Calif.; Clarence L. Blew, Great Lakes, Ill.; James D. Boone, San Diego, Calif.; Ralph C. Boren, San Diego, Calif.; Marshall O. Boudry, New York; O. L. Burton, Washington, D. C.; James J. Cammisa, Newport, R. I.; George W. Dickinson, Mare Island, Calif.; John D. Foley, New York; Paul M. Fuller, Mare Island, Calif.; Louis E. Gilje, Mare Island, Calif.; Francis P. Gilmore, League Island, Philadelphia; Francis G. Gleason, Boston; Garland A. Gray, League Island, Philadelphia; Herman A. Gross, New York; Norris M. Hardisty, Boston; Rafael A. Vilar Isern, League Island, Philadelphia; Ferrell H. Johnson, New York; Everett N. Jones, Great Lakes, Ill.; Julian M. Jordan, Mare Island, Calif.; Warren E. Klein, Pensacola, Fla.; Andrew A. Love, San Diego, Calif.; James G. Neff, San Diego, Calif.; James R. Sayers, San Diego, Calif.; Harold Simons, Great Lakes, Ill.; Zack J. Waters, Norfolk, Va.; Russell W. Wood, Mare Island, Calif., and Oscar D. Yarbrough, Pensacola, Fla.

Thirty New Army Officers

Thirty doctors of medicine who have completed one year's internship at army hospitals have been commissioned first lieutenants in the medical corps of the regular army to date from August 1. The officers with their home addresses are:

Norman Hyde Wiley, Stroudsburg, Pa.
Paul Irwin Robinson, Waltonville, Ill.
Silas Beach Hays, San Francisco.
Henry William Daine, Clear Lake, S. D.
Earl Maxwell, San Antonio.
Daniel John Berry, Fort Benning, Georgia.
William Augustus Hadly, Jr., Pittsburgh.
Roary Adlai Murchison, Equality, Ala.
Paul Hayes, Baltimore.
Hugh Logan Prather, Hickman, Ky.
George Hollander Donnelly, Kenmore, N. Y.
Francis Willard Pruitt, Westfield, Ind.
Elbert DeCoursey, San Antonio, Texas.
John Frederick Bohlender, Grove City, Pa.
Charles Scott Mudgett, Burlington, Vt.
Ellis McFerrin Altfather, Weatherford, Texas.
Aubrey LeVerne Bradford, Fort Worth, Texas.
Wilford F. Hall, Mount Vernon, Ill.
Rollin LeRoy Bauchspies, East Mauch Chunk, Pa.
Ernest David Liston, Woodhaven, L. I., N. Y.
John Ruxton Wood, Dumbarton, Va.
Raymond Wilkins Murray, Washington, D. C.
Jack William Schwartz, Fort Worth, Texas.
Clyde Lemuel Brothers, Richmond, Va.
Roger Gaylord Prentiss, Jr., Johnson, Vt.
Claude Linwood Neale, Saluda, Va.
George Horsfall, Marshfield, Ore.
Harold Edward Schneider, San Francisco.
Olin Foster McIlnay, Polo, Ill.
Samuel Howard Alexander, Oklahoma City.

Foreign Duty in Public Health Service

The following officers of the U. S. Public Health Service have been assigned to duty in other countries at the stations indicated: Passed Asst. Surg. Lieuen M. Rogers, Cobh, Irish Free State; Surg. Gleason C. Lake, Cologne, Germany; Surg. Robert Olesen, Belfast, Ireland; Surg. Peter J. Gorman, Warsaw, Poland; Asst. Surg. Ralph B. Snavely, Liverpool, England; Asst. Surg. John R. Murdock, Honolulu, T. H. The following officers have been relieved from stations abroad and assigned to the homeland where indicated: Surg. Robert L. Wilson, Ellis Island, N. Y.; Surg. Richey L. Waugh, San San Francisco; Surg. Walter C. Teufel, Ellis Island, N. Y.; Asst. Surg. Lucius F. Badger, Jr., Hygienic Laboratory, Washington, D. C.; Surg. Dana E. Robinson, London, England; Surg. James G. Townsend, Naples, Italy; Passed Asst. Surg. Raymond A. Vonderlehr, Hamburg, Germany; Asst. Surg. Maurice Roe, Manila, Philippine Islands, effective about August 2; Surg. Herbert M. Manning, Bergen, Norway, effective about August 3.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 20, 1929.

A National Campaign Against Rheumatism

A new association having for its object an organized campaign against rheumatic diseases has been inaugurated under the title of the National Association for Combating Rheumatism. At the first meeting, letters of approval were received from the chief medical officer of the ministry of health and from others. The crippling effect of rheumatic diseases on a large section of the community, and the important part played in producing sickness and suffering were emphasized. Those responsible for starting the campaign think that it is high time to make a concerted effort to deal with the problem in all its aspects. About one sixth of the total invalidity of the country can be charged to diseases commonly classed as "rheumatic"; they are responsible for the loss of three million weeks of labor and for the payment of about ten million dollars in sick benefit annually. At present there are treatment facilities for only a minority of sufferers. Since the causes of these conditions are still obscure, adequate facilities for research as well as for treatment should be provided. The association proposes to educate medical opinion on the early diagnosis and the importance of continuous treatment. The public is to be told of the value of further research, while efforts directed toward prevention are considered essential. A system of following up cases is to be organized, and efficient home treatment should be carried out. Bound up with this is advice about suitability of occupation, in which employers of labor might well be invited to interest themselves. Climatic and occupational factors are to be carefully studied, and research will not be confined to the laboratory. Cooperation is required between the laboratory worker, the clinician, the biochemist and the radiologist; social workers also should be interested in the campaign. It is hoped that a system of uniform reporting of results will be arrived at; this would certainly aid the collection of statistics and enable the value of various forms of treatment to be assessed. Another proposal is the establishment of treatment centers.

The Difficulty of Diagnosing Arsenical Poisoning

The difficulty of diagnosing arsenical poisoning is shown by a recent case: Mr. Duff, a man of 59, living with his wife and children, died about midnight, April 27, 1928. April 23, he went to the country for a short fishing holiday and returned home, April 26, feeling as if he had a chill. Next morning the chill, if chill it was, had developed surprising and alarming symptoms. During April 27 Mr. Duff suffered from acute vomiting, cramp in the stomach, and a burning sensation in the throat. In the evening he collapsed and died. The physician who attended him was puzzled about the cause of death and brought the facts before the coroner. He suggested that the symptoms might indicate some form of food poisoning, although no one else had suffered from them. Certain of the organs were sent to the public analyst, who failed to find any poison but suggested that death was due to a chill. Being without evidence to account for the death, Dr. Bronte, the pathologist, stated at the inquest that in his opinion death was due to myocarditis, although he said that he was puzzled at the vomiting and other symptoms. June 1, 1928, the coroner returned a verdict that Mr. Duff had died from natural causes. Feb. 14, 1929, Miss Vera Sidney, Mr. Duff's sister-in-law, died. An inquest was ordered on her body and evidence was given that she died from acute arsenical poisoning. March 5, 1929, Mrs. Violet Sidney, the mother of both Miss Sidney and Mrs. Duff, died. At the inquest, evidence was given that she, too, met her death in consequence of acute arsenical poisoning. In May Mr. Duff's body was exhumed on the request of the attorney general and substantial traces of arsenic were found in certain organs. The result is that the attorney general made an application in the high court of justice that the previous inquest held on Mr. Duff be quashed and a new inquest ordered. This was granted.

Teaching Surgery by the Sound Film

At the Section of Urology of the Royal Society of Medicine a remarkable demonstration was given of a new method of instruction of students in urologic and other operations. Three cinematographic films were shown illustrating, respectively, suprapubic prostatectomy, litholapaxy and internal urethrotomy, in which the operator was Sir John Thomson-Walker. The film of urethrotomy was accompanied by a synchronized phonograph record in which the operator explained, as though talking to a class of students, the use and handling of the instruments. This is almost the first attempt to show these operations by cinematographic means directly; sketches have been made before and have been contrived so as to give a sequence to the film picture, but in the present innovation the cinematographic operator has been in attendance right through the operation. The film illustrating the prostatectomy showed in turn the case sheets with the history and the results of the examination, then the preparation of the patient, the passing of the catheter, the making of the incision, the enucleation of the prostate, and the exposure of the bladder base and prostatic bed. Every movement of the surgeon's hands or instruments was clearly shown. The toilet of the internal meatus, the placing in position of the drainage tube, the repair of the abdominal wall, the dressing of the wound, and the removal of the patient on the inclined plane trolley followed. A demonstration was given of the removed prostate, which was sectioned.

The second operation was Bigelow's procedure of litholapaxy. The washing of the bladder with boric acid and the introduction of the lithotrite, and the means by which the stone was grasped and crushed in the jaws of the lithotrite and the fragments evacuated by suction were all shown. The third film showed internal urethrotomy for stricture of the urethra.

Sir John Thomson-Walker said that the purpose of the film, which was quite experimental, was to show the value in medical education of the moving picture, perhaps accompanied by sound production. It seemed to him to offer advantages in teaching in the schools. It was impossible to show every student every sort of case and every sort of operation, but the student could quite well assimilate half a dozen film operations in an afternoon.

The Cooperation of Museums

The fortieth annual conference of the Museums Association was opened in Worthing, when a civic welcome was given to 200 delegates. It is the largest meeting the association has held and was attended by representatives from many parts of the British Isles, as well as from Canada, the United States and Japan. The Carnegie Trust also was represented. In his presidential address, Sir Henry Miers said that in his report to the Carnegie trustees he stated that what was needed in the museum service of the country was improved coordination. The material the museums contained was of incalculable value from every point of view and should be far more effectively used for education, enlightenment and research. This could be secured only by active cooperation. He doubted whether the organization of the whole museum service under any government department could be successful in this country. In any event, he would be sorry to see the independence of the museums curtailed or any attempt made to bring them all into the same mold and to interfere with their present scope for originality. It was better that they should develop a local character and depend mainly on local support. Later on a very different sort

of appeal might be made and might claim national support, when they were able, by means of coordination, to play their part in work of a more definitely national character. There was nothing to prevent a number of local authorities in a district from combining to make their museums more effective by arranging that their exhibits should supplement one another; by organizing exchanges and loans between them for this purpose and with the object of intensifying their local character; by entering into a joint educational scheme, and by developing a rural service. This would constitute a most valuable beginning and example. It was curious that, while so many seemed to want to read about things, there had not yet been aroused a similar desire to see the things for themselves. The museums had not kept pace with the libraries. There were, however, some remarkable signs of a regeneration, brought about to a large extent by the changed conditions of life. A number of circumstances conspired to make the present a hopeful time for a big museum movement. A fashion was setting in the public exhibitions. They were so well advertised that thousands flocked to them, whereas a few years ago there would have been only hundreds. In these advertising days the museums had to seek methods of publicity, and it would repay them to do so. If there was a newly awakened appreciation of exhibitions and displays, if people at large were getting into the habit of using their eyes and desiring to understand what they saw, now was the time for the museums to make the most of their resources.

PARIS

(From Our Regular Correspondent)

July 10, 1929.

Results of Two Hundred and Forty Cases of Phrenicectomy

The method of Goetz and Stuertz for the treatment of pulmonary tuberculosis has not often been employed in France. However, MM. Bérard and Guilleminet of Lyons have recently reported to the Academy of Medicine the results secured in a personal series of 240 cases. Bérard explained, at the same time, his technic, which makes phrenicectomy a simple and safe operation. Resection of the phrenic nerve causes paralysis of the corresponding half of the diaphragm. By means of the fluoroscope, one can see the hemidiaphragm being pushed up from 2 to 8 cm. and sometimes more and then become immobilized, while preserving slight passive movements. The lung undergoes a reduction in volume of from one fifth to one fourth and is brought to a state of rest. Phrenicectomy, according to Bérard, is useful particularly in unilateral tuberculosis with grave, inactive, localized ulcerous lesions. Its effects are less favorable, though sometimes appreciable, in the acute types or in the bilateral types with marked predominance of one side. Phrenicectomy may be done alone or combined with rib operations (thoracoplasty and thoracectomy); but then the action of the two operations is merged and it is impossible to distinguish their individual contributions to the result. The actual effects of phrenicectomy can be more clearly discerned when the operation is done separately. From the study of ninety-six patients operated on by Bérard and observed for periods ranging from six months to six years, it appears that almost half derived benefit from the treatment. About one third of the patients received marked benefit, fourteen of these extending back from two to six years. It is stated that three fourths of the successful cases concern tuberculosis strictly of the right lung. The seat of the lesions (apex or base) is not important; likewise a previous adhesion of the pleura does not counteract the good effects of the operation. The communication of Bérard was combined with lantern slides, which showed the extraordinary effects of phrenicectomy on large cavities of the apex or of the middle portion of the lung. Bérard concludes that, judiciously employed in the surgical treatment of pulmonary tuberculosis, phrenicectomy is of excellent service, but that it should be understood that it is impossible to foresee, in a given case, what the exact effects will be.

The Proposed Creation in Corsica of a Center of Malaria Therapy

Malaria is endemic along the whole eastern coast of the island of Corsica. In these regions, and particularly in the vicinity of Ajaccio (Napoleon's birthplace), though rarely in the city itself, carriers of *Plasmodium vivax* with benign tertian fever are readily found. This organism is regarded by all malariologists as the most suitable for transmitting artificial malaria. It is easy to communicate and easy to cure. A curious thing is that, in inoculating with the benign tertian type, quartan fever often develops. After about twelve days of fever, the treatment is completed, and the fever can be checked by a few intravenous injections of a 1 per cent solution of quinine salts. The whole year through, one can find in Corsica donors of malarial blood, young persons of both sexes, with syphilis positively excluded. They are, of course, more numerous in February and March, when the fevers of autumn, imperfectly cured, reappear, and particularly in September and October, when the new inoculations occur. For these reasons, Dr. Marcou of Ajaccio conceived the idea of creating a special center of malaria therapy at Ajaccio, in view of the difficulty of applying the method in France, by reason of the fact that donors of fresh malarial blood are not always available. Centers for malaria therapy appear to be an actual need. It was at the large universities that the first centers for the application of the treatment were established, more particularly in the psychopathic hospitals. Professor Claude has, with justice, protested against this modus operandi. With our present means of early diagnosis of paresis, the patients do not belong with the insane, and there is no need of placing them in a psychopathic hospital for the inoculation of malaria. Then, again, though the likelihood may not be great, there is a chance that the patient may not be syphilitic; and, on the other hand, even if he is certainly affected with paresis, the injection of syphilitic blood may precipitate a new attack of syphilis, as has already occurred. The donor may present a negative Wassermann test though his blood is virulent and capable of producing syphilis. That has happened as a result of blood transfusions. For these reasons, it is eminently desirable to select as a donor of malarial blood a subject who is absolutely free from syphilis or paresis, and it appears that Corsica offers, in many respects, especially favorable conditions.

Medical Instruction Given Christian Missionaries

According to Marshal Lyautey's idea, the physician is the most important advance agent of colonization. Religious missionaries, in distant countries, in which there are no physicians, are no less important as forerunners of pacific development among peoples who are only partly civilized. It has appeared necessary to give to these missionaries an elementary training in medicine, such as they are likely to need during their stay in foreign lands. The Faculty of Medicine in Lille (Nord) has organized, for the fourth time, with the approval of the pope, a series of eminently practical courses in medicine for the benefit of missionaries and their co-workers. These courses are free. To obtain admission, all that is required is to address to the secretariat of the faculties a request accompanied by the recommendation of the head of a religious order or a missionary society. The certificate must state that the candidate is already attached to a mission or is in course of training for missionary activity. A diploma of *"formation médicale,"* valid only in the mission fields, will be given those missionaries who have pursued the courses and practical exercises for the prescribed period and have passed the required tests. This diploma is recognized in several mission fields and has enabled such students in the past to obtain official aid for the creation of dispensaries. The courses cover: a general survey of the organs and their mode

of functioning; general ideas (in ten lectures) on therapeutics and the ordinary drugs; three lectures on hygiene and prophylaxis; ten on minor surgery; six on diseases of the eye, and three on diseases of the skin; ten on the general aspects and symptoms of the most common diseases; three on the diseases of children, and two on the diseases of the urinary tract. Fifteen lectures are given on the diseases of warm tropical countries, during which the students learn of the special diseases of those regions and of the modifications in the ordinary diseases as effected by the climate. The last mentioned course will be given by Dr. Loiselet, Jesuit, secretary of the Formation médicale missionnaire, which endeavors to keep in touch, later, with the missionaries who have taken the courses. It is at their disposal for any information of a medical nature that may be needed. It sends them the drugs and instruments that the society collects for them. In addition, a number of lectures are given on general scientific subjects, including information on methods of observation that will enable the missionaries to collect valuable information on the geography of countries little known and on the manners and customs of the native populations; also a number of lectures on the flora and fauna of tropical countries.

BUCHAREST

(From Our Regular Correspondent)

June 29, 1929.

Social Reforms

The Roumanian government is dealing with the execution of extensive social reforms. A bill is in preparation which subjects marriage to revolutionary innovations with a view to checking the spread of venereal diseases by punishing the propagators of such diseases with imprisonment. This bill advocates compulsory medical examination before marriage. If the parties fail to produce official certification of their fitness to marry, the registrar must refuse their registration. This social reform is badly needed by this country. Here, where a great mass of the population is still uneducated, where infant mortality is alarming owing to an inherited tendency to disease in children of unhealthy parents, and where preventive measures are in a primitive stage owing to the deficient culture of the masses, the contemplated law on social sanitation fosters a perspective of national protection.

Improvement in living conditions is perhaps of still more importance. Neglected venereal diseases cause serious consequences in an immense number of persons, and a source of much evil in this matter is the scarcity of tenements in towns and cities, which greatly contributes to a decrease in morality. In many cases families living in one room are subletting beds for single men or spinsters, and of course such a situation is the hotbed of immoral conduct and sexual disease. A no less important source of this evil is the extreme poverty of the middle class as a result of the general financial crisis. This goes hand in hand with the misery of sexual life, because more and more girls are forced to earn their living by selling their bodies; and these prostitutes, of good families, are the greatest propagators of venereal diseases. By reason of their origin, they must conceal their occupation even when they are sick and that tends to spread such diseases freely. Because of this, execution of these reforms must go hand in hand with the introduction of radical social reforms, and an attempt must be made to stop unemployment and insure a better standard of living for the working class. This will tend to prevent girls and young women from going into prostitution.

The Radiologic Treatment of Cancer of the Bladder

Dr. A. Boeckel, chief of the urologic section of the surgical clinic of Strasbourg University, has published a special article on the radiologic treatment of cancer of the bladder in the new Roumanian monthly journal, *Bucuresti Medical*. In this article he emphasizes the relative frequency of vesical cancer, which is one of the most formidable manifestations of this scourge. The treatment depends on the stage in which the disease is diagnosed. In many cases, owing to the late occurrence of symptoms, cystectomy is the operation of choice. When only a partial cystectomy is possible, the results are far from satisfactory. In cases in which the cancerous growth is extensive and the performance of a radical surgical operation presents difficulties, fulguration should be resorted to, this method being likely to afford the same results which may be expected from a surgical operation. Boeckel applied this method in six cases of inoperable vesical cancer in which the patients were suffering excruciating pains and loss of blood when voiding urine to the extent that they were ready to undergo any operation which promised some relief. Boeckel first performed cystostomy, and afterward subjected the tumor to intensive electrocoagulation, which was followed by fulguration with a special apparatus. The results have been highly satisfactory: the pain disappeared after about three weeks, and the hemorrhages subsided. The general condition of the patients showed improvement. On the basis of these results, Boeckel intends to continue his experiments on a larger number of patients before arriving at final conclusions as to the efficacy of the method.

Address by Dr. Danielopolu

Dr. Danielopolu, a regular professor in the University of Bucharest, has been appointed correspondent by the Vienna Biological Society. In this capacity he gave his inaugural address on "The Viscerographic Method" at a recent meeting of the society.

Regulations of Practice Applicable to Dental Technicians

In 1923 a law was sanctioned which, with due respect to acquired rights, provided that all dental technicians with ten years of practice to their credit be authorized to function independently. The committee which was entrusted with the control of the observance of this law erroneously took the stand that only ten years of practice was necessary and not ten years of independent practice in which the dentist in question had had his own clientele. In this way many technicians gained authorization who had obtained their certificates and documents under false pretenses, and some among them were even unable to read and write. This was proved by the fact that a new law enacted in 1924 provided for supervision of the authorizations, and prescribed as a title to authorization ten years of continuous work on one's own account. The revision resulted in the withdrawal of many authorizations, which implied the immediate giving up of practice but the technicians did not do so. They referred to their "acquired rights" and threatened to start proceedings for settlement of the matter, so that the minister of sanitation did not dare to forbid them to practice dentistry. Despite this, however, the chief medical officer in Craiova forbade several technicians to practice on the basis that the 1923 authorization had been nullified by the 1924 law. The technicians in question claimed their rights before the court of chancery against the minister of sanitation of the government. The matter was finally taken before the court of cassation, which decided against the plaintiffs arguing that the commission working on the basis of the 1923 law misinterpreted the intention of the law. Council for the plaintiffs tried to offset this decision by attacking the 1924 law as contrary to the constitution. They discussed the question whether or not a law that clears up an existing law interprets the dispositions and annihilates the rights acquired on the basis of the former law. The court of cassation declared the 1924 law to be constitutional, which settled the old complaint of medical dentists and definitely put a stop to the quackery of dental technicians.

The Problem of Taxes

This year the so-called tax press worked in a particularly merciless manner, waking physicians from their lethargy, who, knowing that single appeals are quite useless, requested the Board of Medical Association to hold a general meeting at which ways and means of defense against their merciless exploitation should be discussed. The meeting, which was held recently, was attended by numerous members, making it evident that present financial and economic conditions are critical enough to warrant something being done to relieve them. The following resolutions were drawn up at the meeting:

1. The National Medical Association energetically protests against the increase in taxes, which exceeds that of last year. The increase last year caused general indignation and created impossible situations as some physicians were utterly unable to pay the heavy taxes imposed on them, the result being that in some instances their furniture was sold at public auction. The resolution emphasizes the fact that of late years the income of physicians has markedly decreased through unemployment and general commercial and industrial depression, and therefore the association demands the reduction of taxes.
2. The association believes that professional expenses, such as the purchase of instruments, money spent on vehicles and subscriptions to professional papers, should be entirely deducted from the income serving as a basis of taxation.
3. The present quota of 12 per cent is excessively high. It should be reduced to 8 per cent of the professional income of physicians.
4. The present system of forcing physicians to attend a hearing yearly is a useless and expensive method. The hearing is held in the capitals of counties, and physicians from the country lose one or two whole days while in attendance, as in the majority of cases an appeal is made, another debate is held and that causes a further waste of time. Hearings ought to be held only once in three years.
5. The association demands the cancellation of automobile taxes, as the physician's motor car is not a luxury but a necessary adjunct to his professional practice in the interest of public welfare.
6. As physicians, as a rule, earn little during the first five years of their practice, they should be exempted from paying taxes during this period.
7. The association demands that the levying of taxes should be entrusted to the association, with the assistance of a representative of the financial directorate, as only the association is in a position to recognize the real condition of the practice of physicians.

VIENNA

(From Our Regular Correspondent)

July 3, 1929.

Changes in the Faculty of the University of Vienna

Not all the vacancies in the clinics of the University of Vienna have been filled; many of the successors are still being "considered." Owing to the resignation of Professor Wenckebach, his post in the Klinik für innere Krankheiten has become vacant. One of the most eminent internists will doubtless be called from Munich or Prague to succeed him. The chair of experimental pathology, established by Paltauf, has remained vacant since his death in 1924. Now, Professor Tausch of Innsbruck has the best chance of being called to Vienna. Prof. Alexander Fränkel, the best known cancer specialist in Central Europe (he and Eiselsberg are the last active assistants and pupils of Billroth), will soon sever his connection with the university, as he has attained the age of 70 and is compelled by law to resign. Also Eiselsberg and Hochenegg, the two other directors of the surgical clinics, have already completed their twenty-five years of activity as teachers and are now rounding out their long careers with the special "honor year," after completion of which they must retire. Nothing is known in regard to their successors. To take over the post of Wagner von Jauregg, who recently won the Nobel prize, Otto Poetzl has been called from Prague and is teaching psychiatry on a strictly modern basis. Other appointments are Professor Pichler for surgery of the teeth and jaws, and Professor Fürth for medical chemistry. The latter's most important researches concern the decomposition of the amino-acids.

Professor Wenckebach's Farewell Address

A few days ago, Prof. Karl Wenckebach, the director of the first clinic of internal medicine, delivered his farewell lecture. Though only 65 years old, and thus five years before he would be compelled to resign, he has nevertheless laid down his official post, and gave as the reason for his action his belief that 65 should be regarded as the limit of service for university professors. Many eminent physicians (Skoda, Naunyn) and other savants have expressed the same view. The disease of most clinical teachers, angina pectoris, serves as a warning to quit in time. Wenckebach discussed the various methods of teaching employed by clinicians, and confessed that, after twenty-nine years of service as a medical teacher, he was still uncertain as to the most effective method. Like the eminent Anglo-Saxon teacher Osler, he said he had endeavored to introduce "intellectual contagion" into his method of instruction. He had always taught his pupils to apply critical insight to everything that was presented to them. The pupil must also have the necessary judgment and energy in some instances to throw overboard in his practice what he once learned when it has been superseded by more modern knowledge. At the beginning of his academic career, Wenckebach spent some time in the Netherlands and then in Naples, as a zoologist. He then became professor of anatomy in Utrecht, and later a general practitioner in a rural section. Here it was he learned how much more the physician who is well grounded in anatomy and physiology can accomplish than the physician who is entirely dependent on book knowledge. At that early day, even, he directed his studies chiefly to the physiology and pathology of the heart. Later he was called, in turn, to the universities of Groningen, Strasbourg and Vienna. Here in Vienna, with the aid of a large number of outstanding pupils and investigators, he was able to advance his researches on the physiology and pathology of the circulatory apparatus. Now that he has retired, Wenckebach is planning to record the results of his researches in a large work, which he hopes to complete in five years.

The Skin Test for Pregnancy

Until recently there was no reliable method for diagnosing pregnancy in the earliest stage. Zondek was the first to use the hormone of the anterior lobe of the hypophysis for a pregnancy test. The urine of the pregnant woman contains this hormone in large quantities. If a quantity of urine of a pregnant woman is injected into a female mouse, a marked menstrual reaction occurs in this animal, which is plainly recognizable under the microscope, whereas the urine of a nonpregnant woman is without any effect whatever. But now two Vienna physicians, Dr. Otto Pollatschek and Dr. R. Porges, have worked out a skin test that is said to be absolutely reliable. One-fifth cubic centimeter of the hormone of the hypophysis is injected intracutaneously into the skin. If the woman is not pregnant, a distinct red circle, about an inch in diameter, is formed, after a few hours, at the site of the injection, and remains visible for from twenty-four to thirty-six hours. In pregnant women there is no reaction. So far, the test has proved reliable except in one instance (a woman with a hypophyseal tumor). This simple method is now being employed in all Vienna clinics. Its significance lies not only in its simplicity and reliability but, above all, in the corroborative effect on the theory of hormones. Specific skin reactions had previously been known only for infectious toxins (Schick, Dick, Pirquet tests for diphtheria, scarlet fever and tuberculosis), and for grasses and pollens in hay-fever. For hormones this is an entirely new observation.

The Decline in the Birth Rate in Vienna

According to the publications of the federal bureau of statistics for 1928, the number of living births in Austria decreased 2 per cent, the total, 116,783, having been scarcely two thirds of the 163,354 births in 1913. To be sure, the number of deaths was only 96,097, as against 124,388 in 1913, so that in 1928 there was a slight excess of births over deaths (20,686). In

Vienna, however, the decline in the total number of births was 6,020, as only 19,744 living births were recorded, as contrasted with 25,764 deaths. Thus, it is evident that sixteen more persons die every day in Vienna than are born. But everywhere else in Austria the births predominate over the deaths. But even in the provinces the excess of births over deaths is only 75 per cent of the excess in 1913. Vienna and the province of Vienna have the lowest death rate: 13.3 per thousand inhabitants. From the increase of marriages, which, in 1928, amounted to 49,414, as against 47,513 in 1913, and the concomitant decline in the birth rate, it may be assumed that there is an increase in the number of childless marriages. Exact statistics on this point will be collected from now on.

BUENOS AIRES

(From Our Regular Correspondent)

June 29, 1929.

Centennial of the Foundation of the Academy of Medicine of Rio de Janeiro

The Faculty of Medicine of Rio de Janeiro invited thirty Argentine physicians to a celebration which took place, June 30, in commemoration of the first centennial of the Foundation of the Academy of Medicine. The fourth South-American Conference of Hygiene, Microbiology and Pathology, the second Pan-American Congress of Tuberculosis, the ninth National Congress of Medicine, and the first Brazilian Congress of Eugenics held their congresses on the same date. The representative of the Academy of Medicine to these celebrations, was Dr. B. A. Houssay, bearer of a paper and many salutations for the physicians at Rio de Janeiro. Drs. Speroni, Beltran and Marino were appointed as representatives of the national government. The Faculty of Medicine of Buenos Aires sent a committee formed by Drs. Bullrich and Castaño.

Election of Dean

Previous to the election of dean of the Faculty of Medicine of Buenos Aires, there was a vigorous campaign conducted in the newspapers, and by posters, lectures and meetings. One of the candidates was backed by active politicians who are influential in the government. Professors Iribarne, Zarate and Rojas were candidates. The campaign committees made promises of all kinds to the students. Assemblies were held in rented houses, and every candidate used more than fifty automobiles to carry his supporters. Finally Dr. Julio Iribarne, who had previously been dean, was elected.

Scarlet Fever Epidemic

An epidemic of scarlet fever recently developed on board the steamship *Cap Polonio* while on its way to Europe. It affected many passengers, but the disease was not of a serious nature. Some cases have appeared in Buenos Aires.

Professor of Pharmacology

Dr. Enrique Hug has been elected professor of pharmacology in the Faculty of Medicine of Littoral, which is a branch of the faculty of Rosario. This is the first chair of pharmacology to be established in Argentina. There were previously two chairs in Rosario, one of therapeutics and one of clinical therapeutics, both of which have now been discontinued. Dr. Hug takes over the direction of the Institute of Pharmacology as a full-time professor.

Professorship in the History of Medicine

A professorship in the history of medicine has been established at the Faculty of Medicine of Rosario. The newly appointed occupant of the chair is Dr. Ricardo Caballero, a former senator. The school of medicine of Rosario is indebted to Dr. Caballero for the acquisition of a library of classic medical books, which he obtained as a gift from the government during his senatorial services. The library is valued at 200,000 pesos ($85,000).

Postgraduate Courses

Under the auspices of the National Academy of Medicine, courses in postgraduate studies on several medical subjects will be given this year. Professor Castex's lectures will deal with diseases of the blood; Prof. Dr. Araoz Alfaro will speak on tuberculosis, Dr. Bonorino Udaondo on diseases of the digestive tract, and Dr. Escudero on diabetes.

Army Appointments

Dr. L. Facio, surgeon and attached colonel of the army, has been appointed general health director of the army to fill the place of General Garino. Dr. Buasso has been appointed director of the Hospital Central Militar of Buenos Aires to fill the place of Dr. Levene.

AUSTRALIA

(From Our Regular Correspondent)

June 27, 1929.

Australian Statistics for 1928

The population of Australia, Jan. 1, 1929, was estimated at 6,336,786. According to the commonwealth statistician, the birth rate for 1928 was 21.33 per thousand of mean population. This shows a reduction of 0.34 per thousand when compared with the figure for 1927. The death rate for 1928 was 9.45 per thousand, being identical with that recorded for 1927.

Uniform Registration of Medical Practitioners

The federal health council is seeking to have the powers of registration of medical practitioners transferred from the control of the states to that of the commonwealth. It is proposed to have a commonwealth registration board for medical practitioners, dentists, nurses and midwives. So far, four of the states have assented to the proposal, but the remaining two are not in favor. The question will be again considered at the forthcoming state premier's conference.

Hospital Explosion in Tasmania

As a strange coincidence with the Cleveland Clinic Hospital disaster, an explosion occurred in the operating theater at the Spencer Hospital, Wynnard, Tasmania. The theater had been used during the night for an operation, and in the morning the instruments were being sterilized and the room cleaned. The sterilizer was heated by means of a gasoline stove. This had been lighted by the acting matron, and after watching it for a few minutes, she turned to walk out of the theater. She had barely left the room when there was a terrific explosion. The only other occupant of the theater at the time was the theater attendant who was thrown to the floor. Both the acting-matron and the attendant escaped serious injury. The theater was partially wrecked. Windows were shattered, the brick and plaster walls were cracked through, and the reinforced concrete floor was dislodged. All glassware in the theater was splintered. It is presumed that there was an unnoticed leakage in the gasoline pipe to the sterilizer.

Community Hospitals for Victoria

As a practical outcome of the recent visit to America and Great Britain of Dr. Argyle, chief secretary of Victoria, and Mr. R. J. Love, secretary of the Victorian charities board, the executive council has approved of the community hospital plan for the hospitals of Victoria. It is considered that this is the most important forward movement in the history of the Victorian hospital system. The plan does not merely mean the establishment of community wards at existing public hospitals, but the establishment of separate institutions embodying private, intermediate and public wards. It will, of course, be a

year or so before even the preliminaries of the new plan will be in working order. The first step will be the selection by the charities board of a number of public hospitals at which the idea will be applied and tested. On the data so obtained, the charities board will be able to base a definite line of action. A separate survey will have to be made of the circumstances of each hospital and the district which it serves in order that a decision may be arrived at regarding the relationship between the paying wards and the public hospital.

A review of the facilities available at the Victorian metropolitan hospitals for expansion to community hospitals shows that the Melbourne Hospital, owing to exigencies of space, will not be able to have a community section while it remains on the present site. No land is available on which to erect the extensions which would be necessary.

The Alfred Hospital, on the other hand, has ample space in its 14 acres of land for the building of paying wards. It is expected that this hospital will be the first to be developed on a community basis, and the plan should commence to operate there within a year. Extensions will soon be begun, as a fund has already been opened to finance the cost.

The committee of the St. Vincent's Hospital (conducted by a Roman Catholic nursing order) has decided to build a wing for use as a community hospital, and it will be known as the Berchman's Intermediate Hospital. It will have 100 beds.

Analysis of Roadway Accidents in Victoria

Negligence on the part of motorists was the chief cause of motoring accidents in Victoria in 1928, according to an analysis made by the statistical branch of the police department. The next common cause was the pedestrian's negligence. The latter is not surprising in view of the common practice that is indulged in by city pedestrians of light-heartedly strolling across the roadway with no consideration for the flow or direction of traffic. The local terminology for this hazardous pastime is "jaywalking." Determined efforts have been made by the traffic authorities to check this practice but, like the poor, the jaywalker is seemingly still with us.

The list of more common causes is as follows (expressed in percentages of total accidents investigated):

Motorists' negligence	47
Pedestrian's negligence	13
Accidental	7
Motor car on wrong side	6
Excessive speed	5
Wheel skidding	4
Cyclists' negligence	4
Drunken motorists	2
Faulty brakes	1
Faulty steering gear	1
Drunken pedestrian	1

Regarding the nature of injuries received, general abrasions headed the list with 29 per cent; fractures of arms or legs, 7 per cent; shock and lacerations, 4 per cent; concussion of brain, 4 per cent; died of injuries, 3 per cent; fractured skull, 2 per cent; killed instantly, 1 per cent, and other fractures, 1 per cent.

Dr. Fred Bird Dies

To be associate president with Sir Victor Horsley of the surgical section of the British Medical Association Congress in 1911, and to have the honorary fellowship of the Royal College of Surgeons in England conferred in 1913 at the same time that it was conferred on the surgical leaders in other countries —Mayo of America, Bier of Berlin, Fuchs of Vienna, Bastianelli of Rome and three surgeons of Paris—is a reliable indication of the caliber of Dr. Fred Bird, a distinguished Australian surgeon who died in Melbourne, May 29.

For twenty-five years he was lecturer on surgery at Melbourne University. He was a leading surgeon on the honorary staff of the Melbourne Hospital, and during the late war served in Gallipoli and Macedonia, being subsequently appointed as consulting surgeon to the southern command.

A keen explorer of the mountainous regions of Victoria, an ardent imperialist, and a prominent clubman, he was a man of wide interests and many attainments.

Typhoid Outbreak Near Sydney

An unusual epidemic of sixty-seven cases of typhoid occurred in the western suburbs of Sydney during May. A bacteriologic investigation was undertaken, and inoculation depots were opened.

The probable cause of the outbreak was a quantity of milk that had been distributed in the affected districts. The milk had been "flash" pasteurized in the country collecting depot.

BERLIN

(From Our Regular Correspondent)

July 13, 1929.

The Administrative Expenditures for Social Insurance

According to the most recent statistics (1926), the *krankenkassen* of the guilds (*innungen*) show the highest administrative expenditures per member (6.90 marks) of all the *krankenkassen* authorized by federal enactment. The lowest expenditures per member (3.90 marks) were reported by the *landkrankenkassen*. The total administrative expenditures of all the federally authorized *krankenkassen* amounted, in 1926, to 91,900,000 marks (about $22,000,000), or 4.80 marks per member, which equaled 7.2 per cent of the total expenditures for all purposes. Of the 91,900,000 marks, 73,200,000 ($18,000,000) comes under the head of personal administrative expenditures. The administrative expenditures of the *ersatzkassen* amounted to 13,200,000 marks, or 11.69 marks per member, which is 11.8 per cent of the total expenditures for all purposes. In the "*knappschaftliche kassen*" (miners and the like) the administrative expenditures amounted to 5.30 marks per member.

The administrative expenditures of the carriers of accident insurance amounted, in 1927, to a total of 34,000,000 marks, which was almost 10 per cent of the total expenditures. Of that amount, almost 27,000,000 marks was expended for things of a personal nature; that was 8.4 per cent of the total expenditures. The administrative expenditures of the carriers of disability insurance amounted, in 1927, to 43,400,000 marks, or 5 per cent of the total amount received as dues. Of the total receipts, 4.3 per cent, and of the total expenditures, 6.1 per cent, was used for administrative purposes. For personal administrative purposes 26,400,000 marks was expended. The administrative expenditures of the federal insurance bureau for employees (Reichsversicherungsanstalt für Angestellte) amounted, in 1927, to about 9,600,000 marks, 6,200,000 marks of which went for personal administrative expenditures. The personal and material administrative expenditures taken together, in 1927, amounted to 3.4 per cent of the receipts for dues. The administrative expenditures of the pension insurance for the colliers and like bodies, in 1927, were 6,800,000 marks in the workmen's department, and about one million marks in the employees' department, or about 3.5 and 3.4 per cent, respectively, of the total receipts from dues.

Regulations of the New Berlin Ordinance Covering Conduct on the Street

The following regulations as contained in the new Berlin ordinance covering conduct on the streets have a general interest:

Behavior on the Street. The sick and the infirm, and particularly the blind, deaf and war-injured pedestrians recognizable by the yellow brassard, must be given special attention.

Traffic Restrictions. Hospital and emergency ambulances are exempt from the traffic restrictions imposed by this police order.

Special Obligations of Automobile Drivers. Drivers of automobiles must be sober and wide awake. They must see to it that vehicles are not endangered or persons subjected to annoyances by noise, smoke, steam or disagreeable odors. Strong headlights must be dimmed when driving within lighted areas, and whenever the safety of traffic demands it, especially when meeting other vehicles, except in a dense fog. Immoderately strong headlights may not be employed.

Driving Speed. Drivers must regulate their speed so as always to be in a position to meet their obligations to the traffic. Whenever the traffic is heavy, when the survey of the road is obstructed, or when driving becomes dangerous owing to the nature of the street or as a result of darkness or fog, and especially at intersections with crossings for pedestrians at which there is no traffic control, the speed must be reduced to a point at which the vehicle can be stopped within a very short distance. The same applies to pedestrian crossings that are especially designated as such by signs. In front of schools, hospitals and similar institutions, drivers must proceed slowly and cautiously, particularly when signs to that effect are displayed. The highest permissible speed for vehicles up to 5.5 tons weight, within closely built-up sections, is 40 kilometers per hour (about 25 miles). Vehicles of more than 5.5 tons weight must, under such conditions, preserve a speed under 30 kilometers per hour. If other vehicles are being taken in tow, the highest permissible speed for all motor vehicles within closely built-up sections is 16 kilometers per hour. All vehicles that, by reason of their construction or manner of loading, cause an exceedingly loud noise when driven rapidly, especially heavily loaded trucks, must, within closely built-up areas, be driven no faster than pedestrians walk.

Warning Signals. Drivers are under obligations to warn in due time, by signals or shouts, or in some other suitable manner, any persons who may be dangerously near their vehicles. If a driver notes that a horse or other animal shows fear of his vehicle, or that persons or animals will be endangered if he drives rapidly, he must reduce his speed and, if need be, stop his vehicle. Unnecessary warning signals are prohibited; likewise, all shouting with the aid of instruments. The use of horns is reserved exclusively to motor vehicles.

Loading of Vehicles. Loads of material that develop dust or crumble easily, or are likely to be strewn about or to emit a bad odor (particularly human or animal excrements and waste material from homes, hotels and restaurants, such as rubbish, ashes, refuse, sweepings, garbage, bones and rags), may be transported only in tightly closed vehicles. After such a vehicle has been unloaded, measures must be taken to obviate the development of dust or disagreeable odors.

Requirements with Respect to Drivers of Vehicles. Vehicles may not be driven by persons who are under 18 years of age. Furthermore, the driving of vehicles is prohibited to persons who, by reason of bodily or mental defects or on account of drunkenness, are unable to drive with safety.

Restrictions on Bicyclists. Bicyclists are prohibited from passing vehicles that are proceeding faster than a person walks. Circling about vehicles, persons or animals, and similar movements that are likely to endanger persons or things, or to disturb traffic or frighten animals, are prohibited. Races on the streets are prohibited. Special exhibitions of skill require a police permit.

Warning Signals. Useless or annoying bell signals, signal whistles, horns and constantly ringing bells (sleigh bells and the like) are prohibited; also so-called *radlaufglocken,* which connect with the brakes and ring only when they are used.

Treatment of Animals. Domestic and other animals (except cats, but including feathered animals) are prohibited from running about on the streets.

Treatment of Dogs. Dogs are prohibited from running about on the streets without supervision between 11 p. m. and 6 a. m. In crowded streets dogs must always be held in leash. Dogs must be so managed that they do not disturb persons in the vicinity by their howling and barking. Dogs that bite must, when on the street, be provided with a muzzle that will prevent them from biting and yet will not interfere with respiration and cooling of the tongue. The muzzle must fit properly and not press painfully at any point, especially on the bridge of the nose. Dogs that are unfit for pulling loads, on account of disease or external injuries, shall not be used for that purpose. This prohibition shall apply also to rutting, gravid or suckling females, and to dogs with a shoulder height of less than 60 cm.

Regulations Concerning Pedestrians. Canes, umbrellas and other pointed articles must be carried in such a manner that persons will not be endangered or hindered by them. No more than three persons may walk abreast on the sidewalks. Pedestrians carrying articles that, on account of their shape or size, or for any other reason, discommode, endanger or soil other persons, may use the sidewalk only when other persons will not be bothered.

Regulations Concerning Roller Skates. Roller skates may be used only on the street pavement, but they are prohibited in the principal traffic lanes and in streets with street-car traffic. Exhibitions of skill and racing between skaters or races with vehicles or with pedestrians are prohibited. Also, skating two or more abreast, in chains or in groups on the street, and attaching oneself to vehicles, are prohibited.

Regulations Governing Perambulators and Wheel Chairs. Perambulators and wheel chairs may be used on the sidewalks only when they serve their intended purposes. Two or more may not, however, be propelled side by side. They must not be stopped where they will interfere with traffic.

Regulations Concerning Advertising. The production of noise in any form, or the operation of loud speakers, victrolas or similar apparatus for the purpose of advertising commercial or industrial enterprises, is prohibited. Exceptions will require a police permit.

Regulations Concerning Cleanliness. Unauthorized contamination of the street or of the air of the street is prohibited. This regulation applies particularly to the discarding of paper, remnants of fruit and other refuse, the pouring out of contaminating liquids, the spilling of water while sprinkling flowers in window boxes or on balconies, and the dusting, shaking and sweeping of mats and the like on the street. The beating of carpets, clothing, pillows, mattresses, and similar articles, at open windows, on balconies and on roofs toward the street side is also prohibited. In all operations on the street proper care must be taken to avoid making a dust.

Spreading of Disagreeable Odors. If the transportation of an object that spreads a disagreeable odor or arouses a feeling of disgust cannot be effected in a tightly closed container, it may be transported, during the months of May to September, inclusive, only between 10 p. m. and 6 a. m., and during the remaining months only between 8 p. m. and 7 a. m.

Prevention of Noise. The making of music on the streets, in gardens, front yards, vacant lots, open halls, and on verandas and balconies is prohibited. The same prohibition applies to singing and to the causing of loud noise which may disturb the peace and order of the street. It applies also to closed rooms on the street, especially residences, restaurants and selling centers.

Special Regulations Concerning Public Parks and Parking Strips. Perambulators, wheel chairs, and the like, may use areas, streets and paths destined for pedestrians. However, the police bureaus having jurisdiction may decree that bicycles and dogs may not be taken into a given park, or that baby carriages, wheel chairs, and the like, are excluded from certain parts of a park.

Marriages

RAY W. OLDENBURG, Klamath Falls, Ore., to Miss Gene Banks of Halifax, N. S., Canada, at Reno, Nev., June 23.

IRENE M. BLANCHARD to Mr. Ambrose Mueller, both of Webster Groves, Mo., at Los Angeles, July 2.

WALTER BOYCE ROUNTREE, Hartselle, Ala., to Miss Cornelia Mae Lamb of Nashville, Tenn., June 17.

HENRY F. WACKENRODER, Vancouver, B. C., Canada, to Miss Dorothy Newcombe, June 17.

GILBERT JOHN LEONARD, St. Paul, to Miss Anne Swanson of Deerwood, Minn., in June.

LAWRENCE RUSSEL GOWAN to Miss Marguerite Jane Lydon, both of Minneapolis, in May.

R. ALLEN EYESTONE, Carey, Ohio, to Miss Helen Harvey Baldwin of Toledo, June 15.

EDMUND W. SIMMONS to Miss Louise Dolph, both of Portland, Ore., June 6.

FRANCIS T. CARNEY, Johnstown, Pa., to Miss Demaris Hoffman, June 4.

EDWARD ROSE to DR. ELIZABETH KIRK, both of Philadelphia, July 6.

Deaths

John Calhoun McClintock, Topeka, Kan.; Rush Medical College, Chicago, 1879; member of the Kansas Medical Society; at one time professor of principles and practice of surgery and clinical surgery, Kansas Medical College; formerly member of the board of health; trustee of the Washburn College; aged 74; for many years on the staff of the Christ Hospital, where he died, June 28, of arteriosclerosis and edema.

Harry C. Frankenfield, Washington, D. C.; Howard University School of Medicine, Washington, 1886; in charge of the U. S. Weather Bureau, Chicago, 1887-1894, and St. Louis, 1894-1898; engaged in other activities of the U. S. Weather Bureau until 1927; aged 66; died, July 29, at the Emergency Hospital, of injuries received when struck by an automobile.

William Henry Luckett ⊕ New York; Medical Department of Columbia College, New York, 1894; served during the World War; at one time clinical professor of surgery, University and Bellevue Hospital Medical College; formerly on the staffs of the Lutheran and Harlem hospitals; aged 56; died, July 20, of heart disease.

Edward Stumbo, Martin, Ky.; Kentucky University Medical Department, Louisville, 1905; University of Louisville School of Medicine, 1907; member of the Kentucky State Medical Association; aged 49; superintendent of the Beaver Valley Hospital, where he died, July 3, of pneumonia.

John V. Wenzel ⊕ Ashland, Wis.; University of Illinois College of Medicine, Chicago, 1899; also a druggist; on the staffs of the Ashland General Hospital and St. Joseph's Hospital; aged 52; died, June 15, at Marshfield, of chronic myocarditis.

William R. Moore, Columbus, Ohio; Medical College of Ohio, Cincinnati, 1888; member of the Ohio State Medical Association; for fourteen years medical examiner for the state industrial commission; aged 81; died, July 24, of chronic nephritis.

Walter Alvin Ladwig, Wausau, Wis.; Rush Medical College, Chicago, 1902; member of the State Medical Society of Wisconsin; veteran of the Spanish-American and World wars; aged 53; died suddenly, July 2, of cerebral hemorrhage.

Albert Marshall, Bonne Terre, Mo.; Medical Department of Washington University, St. Louis, 1902; member of the Missouri State Medical Association; aged 49; died, May 12, of angina pectoris and arteriosclerosis.

William Alfred Haley ⊕ Houston, Texas; Barnes Medical College, St. Louis, 1893; Medical Department of the Tulane University of Louisiana, New Orleans, 1906; aged 63; died, March 13, of cerebral hemorrhage.

Martin MacHarg, Albany, N. Y.; Albany Medical College, 1885; member of the Medical Society of the State of New York; aged 67; died, June 24, at the Albany Hospital, of coronary thrombosis and coronary sclerosis.

Charles E. Spoon, Burlington, N. C.; Medical Department University of Tennessee, Nashville, 1907; member of the Medical Society of the State of North Carolina; aged 48; died suddenly, July 4, of heart disease.

Thomas Lewis Gillson, Middletown, N. Y.; Long Island College Hospital, Brooklyn, 1891; member of the Medical Society of the State of New York; aged 66; died in July, of carcinoma of the tongue.

Wilson A. Lake, Erma, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1888; member of the Medical Society of New Jersey; aged 65; died, July 22, of carcinoma of the rectum.

James Romulus Klyce, Ellenton, Fla.; Eclectic Medical Institute, Cincinnati, 1875; aged 77; died, June 28, at the Christian Roof Memorial Hospital, Bradenton, of uremia, following prostatectomy.

Jefferson Demetrius Gibson ⊕ Denver; Medical College of Alabama, Mobile, 1887; member of the Radiological Society of North America; aged 66; died suddenly, July 18, of heart disease.

Edward Hamilton Squibb ⊕ Brooklyn; Medical Department of Columbia College, New York, 1881; aged 76; died, July 6, at his summer home in South Harwich, Mass., of heart disease.

Alfred A. Gray, Calhoun, Mo.; St. Louis College of Physicians and Surgeons, 1896; member of the Missouri State Medical Association; aged 61; died, May 31, of carcinoma of the throat.

John David Weaver, Knoxville, Tenn.; Tennessee Medical College, Knoxville, 1901; aged 59; died, July 11, of injuries received in an automobile accident which occurred in November, 1928.

John T. Lloyd, Baldwin, Ill.; Keokuk (Iowa) Medical College, 1891; member of the Illinois State Medical Association; aged 64; died, July 7, as the result of a cerebral hemorrhage.

Charles W. Baker, Stanwood, Iowa; Starling Medical College, Columbus, 1878; past president of the Cedar County Medical Society; aged 75; died, March 18, of cerebral hemorrhage.

Frank Darlington Rathbun, New Windsor, Ill.; Rush Medical College, Chicago, 1877; Jefferson Medical College of Philadelphia, 1878; aged 74; died, July 1, of diabetes mellitus.

William T. Kudlich, Bonn, Germany; Medical Department of Columbia College, New York, 1878; formerly practitioner in New Jersey; aged 72; died, April 16, of arteriosclerosis.

Allen Bush, Pleasantville, N. J.; Eclectic Medical Institute, Cincinnati, 1899; past president of the Monongalia County Medical Society; aged 60; died, June 26, of heart disease.

Gideon H. Huddle, Dallas, Texas; Louisville (Ky.) Medical College, 1894; aged 62; died, June 20, in the St. Paul's Sanitarium, of cerebral hemorrhage and arteriosclerosis.

John Joseph Surkosky, Windber, Pa.; Jefferson Medical College of Philadelphia, 1927; aged 29; died, July 10, at the Mercy Hospital, Pittsburgh, of miliary tuberculosis.

Harry Freeman, New York; Bellevue Hospital Medical College, New York, 1884; aged 65; died, July 16, at the French Hospital, of heart disease, following an operation.

Roland Vivian Leep, Bandon, Ore.; University of Oregon Medical School, Portland, 1911; aged 41; was accidentally shot and killed, June 29, while hunting sea lions.

James Harrington Young ⊕ Lansford, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1901; aged 52; died, July 11, of heart disease and nephritis.

John Woodbury Stimson ⊕ Fitchburg, Mass.; Dartmouth Medical School, Hanover, N. H., 1880; aged 73; died, July 3, at Templeton, of heart disease and nephritis.

Luther H. Ratliff, Lawrence, Ind.; Medical College of Indiana, Indianapolis, 1896; served during the World War; aged 69; died, July 9, of lobar pneumonia.

James Beal Angle, Ocracoke, N. C. (licensed, North Carolina, under the Act of 1885); aged 80; died, June 16, in a hospital at New Bern, of acute nephritis.

George Henry Patchen, New York; Homeopathic Medical College of the State of New York, 1868; aged 83; died, July 11, of acute ascending spinal paralysis.

Thomas Stapleton Bullock, Lexington, Ky.; Medical Department of Columbia College, New York, 1883; aged 70; died, July 27, of multiple sclerosis.

Benjamin Kain Brick ⊕ Marlton, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1899; aged 57; died, June 25, of uremia.

Samuel Wade Young, Hico, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1888; aged 72; died, January 8, of heart disease.

Jesse Abraham Levine ✠ Spring Valley, N. Y.; Fordham University School of Medicine, New York, 1915; aged 37; died, May 27, of endocarditis.

Frederick B. Leberknight, Newburg, Pa.; Jefferson Medical College of Philadelphia, 1874; aged 82; died, May 23, of pulmonary hemorrhage.

Andrew J. Pinson, Libertyville, Ind.; Indiana Medical College, Indianapolis, 1873; Civil War veteran; aged 85; died, July 21, of pneumonia.

William Wolfe Bowser, Omaha; University Medical College of Kansas City, Mo., 1911; aged 63; died, June 3, of carcinoma of the stomach.

Oliver Leiser, Anaconda, Mont.; University of Pennsylvania School of Medicine, Philadelphia, 1882; aged 79; died, June 18, of senility.

James Augustus Hannon, Scranton, Pa.; Jefferson Medical College of Philadelphia, 1926; aged 28; died, June 24, of tuberculous pneumonia.

William Warren Maple ✠ Des Moines, Iowa; Eclectic Medical Institute, Cincinnati, 1892; aged 64; died, July 11, of coronary embolism.

William Compton, Nashville, Tenn.; University of Nashville Medical Department, 1868; aged 82; died suddenly, July 7, of heart disease.

Frederick Stedman Snow ✠ Boston; Harvard University Medical School, Boston, 1899; aged 56; died suddenly, July 2, of heart disease.

Raymond Chester Morris, Battle Creek, Mich.; Rush Medical College, Chicago, 1897; aged 60; died, June 21, of acute gastritis.

John Smith Waddle, Hope, Ark.; University of Louisville (Ky.) School of Medicine, 1878; aged 80; died, July 11, of mitral stenosis.

Joseph Mark Geus, Nicktown, Pa.; University of Pittsburgh School of Medicine, 1928; aged 30; died, June 23, of tuberculosis.

Sara C. Spottiswoode, Orange, N. J.; New York Medical College and Hospital for Women, 1886; aged 72; died, July 24, of pneumonia.

Walter Wells Caswell ✠ Brookline, Mass.; Tufts College Medical School, 1911; aged 49; died, June 29, of chronic nephritis and uremia.

Frederick B. Drescher ✠ St. Louis; Missouri Medical College, St. Louis, 1884; aged 67; died, July 12, of lobar pneumonia.

James Henry Womack ✠ Waco, Texas; Baylor University College of Medicine, Dallas, 1912; aged 57; died, June 29, of encephalitis.

George Washington Bordeaux, Chester, Ga.; Maryland Medical College, Baltimore, 1904; aged 61; died, June 26, of nephritis.

Robert Scott Crebs, Olvey, Ark.; Eclectic Medical Institute, Cincinnati, 1882; aged 77; died, February 14, of chronic nephritis.

John Byers Wilson, Cincinnati; Cincinnati College of Medicine and Surgery, 1890; aged 72; died, June 29, of heart disease.

John Lamar Kimbell ✠ Shreveport, La.; Hospital College of Medicine, Louisville, 1884; aged 67; died, June 29, of heart disease.

James Wilson Connelly, Farmington, Ill.; Rush Medical College, Chicago, 1890; aged 67; died, July 14, of heart disease.

Charles B. Aplin ✠ Solomon, Kan.; Columbus Medical College, 1892; aged 59; died, April 24, of cerebral hemorrhage.

James A. Pryor, Shattuck, Okla.; Eclectic Medical Institute, Cincinnati, 1890; aged 66; died, June 29, of heart disease.

Edward D. Sterner, York, Pa. (licensed, Pennsylvania, 1893); aged 73; died, May 13, of carcinoma of the stomach.

Adolph H. Christensen ✠ Chicago; Bennett Medical College, Chicago, 1902; aged 59; died, July 7, of myocarditis.

Lewis Carthrae, Sr., Corder, Mo.; Missouri Medical College, St. Louis, 1874; aged 84; died, July 5, of senility.

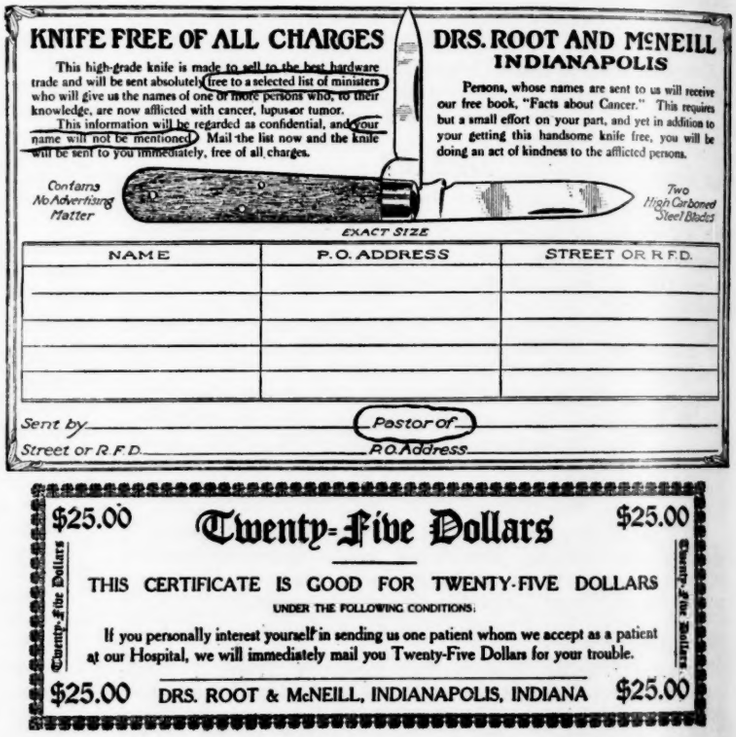
Bureau of Investigation

A CANCER QUACK QUITS

Charles C. Root and His Indianapolis Cancer Hospital Go Out of Business

The Indianapolis Cancer Hospital, long a disgrace not only to the state of Indiana but also to the Middle West, has closed its doors, and a few weeks ago a receiver was appointed for the outfit by the circuit court. Charles C. Root, M.D., the medical director of the concern, is reported to have disappeared.

This commendable state of affairs has been brought about through the untiring activity of the Indianapolis Better Business Bureau and its manager, Mr. T. M. Overley. The Indianapolis Cancer Hospital was dealt with at some length in THE JOURNAL about seven years ago—Sept. 2, 1922. It was brought out in that article that the outfit was originally known as the Parkview Sanatorium and later called the Leach Sanatorium. The business was started by a quack, one Leon T. Leach, whose cancer cure business originally was mainly of a mail-order character. In 1910 the federal authorities declared Leach's business a fraud and debarred it from the mails. Leach got his training in "cancer cure" fakery as manager for his father-in-law, another quack, D. M. Bye, who operated a "cancer cure" in Indianapolis under the name "Dr. D. M. Bye Combination Oil Cure Company." Charles C. Root, who for the past few years has been operating the Indianapolis Cancer Hospital, was for some years in the employ of Leach and was, in fact, a classmate of Leach.


KNIFE FREE OF ALL CHARGES
This high-grade knife is made to sell to the best hardware trade and will be sent absolutely free to a selected list of ministers who will give us the names of one or more persons who, to their knowledge, are now afflicted with cancer, lupus or tumor.
This information will be regarded as confidential, and your name will not be mentioned. Mail the list now and the knife will be sent to you immediately, free of all charges.
DRS. ROOT AND McNEILL
INDIANAPOLIS
Persons, whose names are sent to us will receive our free book, "Facts about Cancer." This requires but a small effort on your part, and yet in addition to your getting this handsome knife free, you will be doing an act of kindness to the afflicted persons.
Contains No Advertising Matter
Two High Carboned Steel Blades
EXACT SIZE
NAME
P.O. ADDRESS
STREET OR R.F.D.
Sent by
Pastor of
Street or R.F.D.
P.O. Address
$25.00
Twenty-Five Dollars
$25.00
THIS CERTIFICATE IS GOOD FOR TWENTY-FIVE DOLLARS
UNDER THE FOLLOWING CONDITIONS:
If you personally interest yourself in sending us one patient whom we accept as a patient at our Hospital, we will immediately mail you Twenty-Five Dollars for your trouble.
$25.00 DRS. ROOT & McNEILL, INDIANAPOLIS, INDIANA $25.00

Photographic reproduction of the offers of Root and McNeill to clergymen. For the *names* of sufferers from cancer, the clergymen will receive a pocket knife; for a *"patient"* that will go to Root and McNeill, he will receive $25.00—and the victim will know knothing about it!

The Indianapolis Better Business Bureau, recognizing the menace that this cancer-cure fakery was to the public and, incidentally, to the good name of Indianapolis itself, began collecting evidence against the Indianapolis Cancer Hospital and Charles C. Root. It then submitted the evidence collected to the Indiana State Board of Medical Registration and Examination, and Charles C. Root was cited to show reason why his license should not be revoked. The charges against Root were signed by Mr. T. M. Overley, manager of the Better Business Bureau, as an individual. They asked revocation of Root's license on the statutory grounds of drunkenness and gross immorality. It was

brought out at the hearing that Root always collected a large part of his fees in advance and refused to give treatment to those who did not meet the "down payment"—which was often as high as $500; that he diagnosed practically every case that came to him as cancer, took no microscopic tests, and although he claimed to treat only carcinoma and not sarcoma, was unable to distinguish between the two; that he was frequently intoxicated and while in this condition swore at patients and nurses, and that many of the victims at Root's hospital were given "treatments" by unregistered and unlicensed nurses.

One of the most disgusting and disheartening things brought out at the hearing was the fact already made public by THE JOURNAL in its article that no small proportion of the victims that came to Root were through the venality of ministers of the gospel. Root's method of getting a "sucker list" was to circularize between 2,000 and 3,000 ministers throughout the country each month, asking them for the names of people who they thought might have cancer. Root offered as a bait a fountain pen to every minister who would send in three or more names of prospects. It was testified at the hearing that these fountain pens were purchased in lots of 600 and, according to the witness, "went in no time." Root also carried advertisements in 750 newspapers throughout the country, most of them country weeklies.

In preparing its case against the Indianapolis Cancer Hospital, the Better Business Bureau submitted to the Bureau of Investigation of the American Medical Association specimens of what quack Root called his "Liquid Laboratory Product," which was said to be injected into the cancer. Examination in the American Medical Association Chemical Laboratory disclosed the fact that the essential drug in the mixture was zinc chloride.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HYPERSENSITIVITY TO INSECT BITES

To the Editor:—Can you give me any suggestions for treatment of a patient, otherwise normal, hypersensitive to insect bites? A man, aged 32, for the last twelve years has been afflicted so that he dreads the summer time. Mosquitoes in this country and midges in England have the same effect. In about an hour after the bite there is marked itching and the site of inoculation rapidly begins to swell. The area of inflammation is often 2½ inches in diameter, and one on the wrist has extended up the arm to the elbow. There is also redness and heat, with the pain expressed as a feeling of tension. Resolution takes place rather quickly at the end of the third day. None of the lesions have ever gone on to pus formation; when opened, nothing can be expressed but watery serum. He has tried many physicians and, a chemist himself, he has used every known application and antiseptic, none of which influenced in any way the course of the process. Can you give me any suggestions for treatment and tell me whether any form of immunization has ever been worked out?

GEORGE C. LITTLEFIELD, M.D., Webster, Mass.

ANSWER.—From a hasty search of the literature it seems that there has never been a solution offered for this problem. Alcoholic extracts of insects have been used for skin testing but no mention has been found of their use for immunization. Theoretically, this ought to be possible. Perhaps nonspecific protein therapy might lessen the sensitization.

TREATMENT OF PRURITUS VULVAE

To the Editor:—A woman, aged 27, was confined a year ago. A midline episiotomy was done, which healed perfectly. About six weeks later itching started at that area and extended over the labia minora. Scratching relieves the condition at first, then increases it. The patient is forever scratching, she states. She wakes up at night scratching the area. The patient is a model and is of a rather neurotic type. Examination shows the inner surface of the labia minora dry but not thickened or coarse. The perineum is normal. The cervix is small, not noticeably lacerated, and not with an abnormal amount of endocervical secretion. The urine is normal. The blood sugar is normal. The patient's mother had a similar condition, which was relieved by a sodium bicarbonate bath. The usual medication for pruritus has not been effective. Douches seem to relieve at first but perspiration increases the condition. Salves with phenol have no effect. What could the condition possibly be? Is there anything that will relieve it? Kindly omit name. M.D., New York.

ANSWER.—There are numerous causes for pruritus vulvae, many of which are fairly obvious, such as leukorrhea, thrush, *Trichomonas vaginalis* vaginitis, kraurosis, leukoplakia, pediculosis and such systemic conditions as diabetes, syphilis and morphinism. However, in many cases no cause can be found and the condition is usually designated as neurotic. In the case cited, the episiotomy wound most likely has nothing to do with the itching. A careful search should be made for a possible cause and, if one is found, treatment should be directed toward it. If no cause can be discovered, the patient's general condition should be built up. An attempt should also be made to obtain a careful personal history with a view to detecting a psychic cause or one based on a disturbance in the sex relationship. If the cause seems to be local but no specific one is ascertainable, applications of silver nitrate, calamine lotion-N. F., zinc oxide or sodium bicarbonate may be tried. Mild cleansing douches are helpful. In stubborn cases, procaine hydrochloride injected under the pruritic area and around the near-by nerves may help. Mild roentgen-ray treatments have helped some women and, in exceptionally obstinate cases, excision of the vulva has been resorted to with success.

TREATMENT OF CHRONIC IRRITATION OF SKIN OF WORKER IN CAUSTIC SODA

To the Editor:—I have a patient who has been employed at the caustic soda plant at Solvay, N. Y., for the last fifteen years. For the past twelve years he has had a skin rash which I find difficult to describe, and which is found only on the legs, being worse in the region of the ankle and instep. It is in the superficial layer of the skin and appears as small shiny areas which itch intensely and exude serum. The patient uses vinegar, which gives relief from itching. The Wassermann reaction is negative, and the patient has had all kinds of treatment, including roentgen therapy, without relief. The disease is presumably caused by the caustic soda, but he will not resign his position. Since I am unable to find any satisfactory treatment, I wonder whether a similar condition has been encountered. I would appreciate any advice concerning treatment, as I have given up hope of ever curing the man. M.D., New York.

ANSWER.—Irritating chemicals inaugurate many dermatoses but fungi perpetuate them. In this instance caustic soda (sodium hydroxide) is capable of inducing the dermatitis. The settling of caustic soda dust around the shoe tops paves the way for the dermatitis around the ankles, although the commoner site is the forearms and hands. Later, as the skin becomes readily responsive to divers irritants, the spores of fungi find entrance and a recurrent resistant condition is provided for. It is highly probable that appropriate microscopic examinations of scrapings from the lesions will reveal spores or portions of growing fungi.

These conditions are truly resistant to all treatments. Temporary healing is fairly readily obtained, but recurrences are to be expected. The time comes when almost any irritant, such as harsh soaps, will cause acute outbreaks. In this instance, if caustic soda is the true exciting factor, continuation at work may offset the worth of those medicaments that ordinarily afford palliative relief. Even so, use of pine tar ointments or applications of pine oil should be arranged for. In very acute flare-ups wet dressings with aluminum acetate are indicated in the early period, followed by applications in the later period of pine tar ointments. Roentgen ray and ultraviolet irradiations have proved efficacious in many cases.

POSSIBLE DANGERS FROM LEAD IN PEWTER VESSELS

To the Editor:—In view of our rapidly increasing knowledge of the toxicity of lead, should one discourage the use of pewter for hot water—a thing which is becoming a fad in various quarters—because of possible poisoning? I wish that the Einstein property of time might enter into reports of lead poisoning in order that one might know the length of time to which the individual has been exposed to lead water or lead containing drugs. Also, I would urge the more frequent examination of the urine for parts per million or, the same thing, milligrams per liter, in all cases in which lead poisoning is suspected.

W. LOUIS CHAPMAN, M.D., Providence, R. I.

ANSWER.—Several investigators have recently detected appreciable quantities of lead, in the form of lead compounds, in the urine of practically all persons examined. This occurred in the absence of any known exposure to lead. This may be interpreted to mean not that lead is a normal constituent of urine, but rather that many apparently normal persons take into their bodies lead from unknown sources in quantities so low as not to produce any manifestations falling within the clinical entity known as plumbism, which, however, may constitute a source of minute impairment and premature or exaggerated degenerative diseases. The origin of this urinary lead is not known. A multiplicity and variability of sources is probable. One community may show a high lead content in the urine of its citizens as a result of a lead piped water supply. Another group may find its lead in foods. Small children are prone to obtain lead from lead painted walls, cribs and toys. So little lead as one six hundred

and thirtieth grain reaching the body daily may in time produce clinical lead poisoning.

The indiscriminate use of pewter as a container of drinking water or comestibles is to be frowned on. Wholesale plumbism has been traced to the use of leaden vessels in connection with alcoholics. Pewter is an alloy of lead and tin with some copper added at times. The proportion of lead varies as the whims of the metallurgist (real or pseudo) may dictate. The commonest combination is lead 20 parts, tin 80. The French law forbids a higher content of lead than 18 per cent, on the assumption that any higher content will pave the way for lead intoxication. The eutectic proportions of lead and tin are: tin 63, lead 37 parts. Since the constituency of old pewter may not readily be determined without marring, it is urged that pewter be banned from the dining room, and that its virtues be gaged from the decorative rather than the utilitarian point of view.

The actuality of lead poisoning from metallic lead is attested to in the recently published examination report of 102 lead conducted water supplies (Wright, W.; Sappington, C. O., and Rantoul, E.: *J. Indust. Hyg.* **10**:234 [Sept.] 1928). Of 253 persons consuming these waters and examined, sixty-three (24.9 per cent) presented lead poisoning as a clinical entity. All these waters were found to contain lead. The length of the pipe and the duration of exposure stood in no quantitative relation to the incidence of lead poisoning.

The American Public Health Association's committee on lead poisoning in the United States recommended in 1928 that qualitative amounts of lead in urine be regarded as without final diagnostic value in suspected lead poisoning. Quantitative testing is a requisite since any person is likely to yield a qualitatively positive test.

TREATMENT OF PROLONGED LACTATION

To the Editor:—In a woman, aged 27, whose child is nearly 6 years old, there is still the secretion of milk. The breasts become painfully full every ten days and must be emptied with a breast pump. Her general health is good and the menses are regular. Under belladonna and ergot treatment the milk slackens, but as soon as treatment is discontinued the usual flow returns. It is a very annoying condition and any help you can give me will be appreciated. Please use initials only.

M.D., Colorado.

ANSWER.—Pumping the breasts tends to add to the persistence of lactation. If the breasts are left continuously undisturbed, secretion of milk should cease. A pelvic examination should be made to ascertain with certainty that there is no abnormality that may be responsible for the continued activity of the mammary glands. Restriction of liquids to a minimum compatible with good health, unusually free elimination from the bowels, and careful regulation of the sexual life are all factors of importance.

TREATMENT OF LEAD ANEMIA

To the Editor:—Please advise treatment for severe lead anemia. Kindly omit name.

M.D., Indiana.

ANSWER.—There is nothing special about the treatment of lead anemia. It should be treated like any other secondary anemia, in addition, of course, to the special treatment of lead poisoning. Thus, besides preventing the further introduction of lead into the system, and favoring its elimination by means of magnesium sulphate (from 5 to 15 Gm. every morning), one should prescribe iron in the form of syrup of ferrous iodide, which is compatible with sodium or potassium iodide, and also desirable in the treatment of plumbism. The two might be combined, as in the following prescription:

℞ Potassium iodide ..... 5 to 10 Gm.
Syrup of ferrous iodide ..... 60 cc.
M. and label: Teaspoonful in milk three times a day after meals.

MAGNESIUM SULPHATE IN SPASTIC CONSTIPATION

To the Editor:—Please give me information as to the use of magnesium sulphate in spastic constipation and contractures of the large bowel. Which is the best concentration of the salt to use for enemas? Is it advisable to use magnesium sulphate in suppositories? Is magnesium sulphate also efficacious in other spastic conditions, as pylorospasms or asthma, and would it be advisable to use it by rectum or otherwise? Please omit name and town.

M.D., Poland.

ANSWER.—There is probably an antispasmodic action exerted by magnesium sulphate besides its osmotic effect in producing purgation. This probably accounts in part for the relatively slight degree of griping associated with its powerful cathartic action. Hence it is not contraindicated in spastic conditions of the bowel, as are the more irritant purges.

It is commonly employed in rather concentrated solution, as in the 1, 2, 3 enema of some hospitals, which is composed of magnesium sulphate, 1 ounce; glycerin, 2 ounces; water, 4 ounces. Suppositories, being limited in size to 2 Gm. or thereabouts, would not carry enough magnesium sulphate for therapeutic effect.

It is not made use of in pylorospasm, probably because of its cathartic action. In asthma, it would have to be used intravenously and would have a too generally depressing effect. Epinephrine or ephedrine is a more specific antispasmodic against asthma. Absorption of magnesium compounds from the rectum or any other portion of the alimentary tract is too slow to permit development of systemic antispasmodic action.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 3, 1929. Sec., Dr. Harry C. Devighne, Juneau, Alaska.

NATIONAL BOARD OF MEDICAL EXAMINERS: Examination to be held in all class A medical schools, Sept. 16-18, 1929. Executive Secretary, Everett S. Elwood, 225 South Fifteenth Street, Philadelphia, Pa.

NEW HAMPSHIRE: Concord, Sept. 12-13, 1929. Sec., Dr. Charles Duncan, Concord, N. H.

OKLAHOMA: Oklahoma City, Sept. 10-11, 1929. Sec., Dr. J. M. Byrum, Shawnee, Okla.

PORTO RICO: San Juan, Sept. 3, 1929. Sec., Dr. D. Biascoechea, Box 804, San Juan, Porto Rico.

Colorado April Examination

Dr. Philip Work, former secretary of the Colorado Board of Medical Examiners, reports the written examination held at Denver, April 2, 1929. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Seven candidates were examined, all of whom passed. Six candidates were licensed by reciprocity. The following colleges were represented:

PASSED	Year Grad.	Per Cent
Rush Medical College	(1928)*	85.4, 86.1, 87.5
Harvard University Medical School, Boston	(1926)	91.1
University of Nebraska College of Medicine	(1928)	82.3
Royal University of Naples Faculty of Medicine and Surgery, Naples, Italy	(1927)†	80.2
Osteopathy		80.1

LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College	(1928)	Illinois
University of Illinois College of Medicine	(1904)	S. Dakota
University of Minnesota Medical School	(1925)	Minnesota
Creighton University School of Medicine, Omaha	(1928)	Nebraska
Lincoln Medical College of Cotner University	(1925)	Illinois
University of Nebraska College of Medicine	(1925)	Nebraska

* These candidates have received their four year certificates and will receive their M.D. degrees on completion of one year's internship in a hospital.

† Verification of graduation in process.

Vermont February Examination

Dr. W. Scott Nay, secretary, Board of Medical Examiners for Vermont, reports the written examination held at Burlington, Feb. 12-14, 1929. The examination covered 12 subjects and included 90 questions. An average of 75 per cent was required to pass. Five candidates were examined, of whom four passed. Two candidates were licensed by reciprocity and three by endorsement of credentials. The following colleges were represented:

PASSED	Year Grad.	Per Cent
McGill University Faculty of Medicine	(1928)	92.5
University of Montreal Faculty of Medicine	(1922) 82, (1923)	82.5
Medical Faculty of the Royal Hungarian University, Budapest, Hungary	(1921)	75.7

FAILED	Year Grad.	Per Cent
Royal University of Naples Faculty of Medicine and Surgery, Naples, Italy	(1927)	67.3

LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College	(1882)	Washington
Hahnemann Medical College and Hospital of Philadelphia Homeopathic	(1925)	Penna.

ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Yale University School of Medicine	(1925)	N. B. M. Ex.
McGill University Faculty of Med.	(1898)	Quebec, (1924) Canada

Book Notices

DIE NÄHRSCHÄDEN DES KINDES, IHRE ENTSTEHUNG, VERHÜTUNG UND HEILUNG. Ein Leitfaden für die Praxis. Von Hans Aron, a. o. Professor für Kinderheilkunde an der Schlesischen Friedrich-Wilhelms-Universität in Breslau. Paper. Price, 6 marks. Pp. 152, with 37 illustrations. Berlin: Urban & Schwarzenberg, 1928.

The author attempts in this little book to enumerate the advances in the knowledge and methods of prevention of the various food injuries. It is his purpose to present a short manual as a guide to the general practitioner, the children's specialist and the social worker. He is impressed with the importance of pointing out to these groups the prevention and treatment of injurious effects that may be produced by food. The clinical descriptions are presented largely in the form of records of cases that occurred in the author's practice. He thinks that, in order to teach diagnosis and treatment, one will succeed best if he will impart the knowledge he has derived from his own experience. In these clinical case reports the author records the nutritional disturbances that occur from overfeeding, underfeeding or improper mixtures of otherwise harmless foods. He finds that most of the nutritional disturbances of infancy and young childhood are due to deficiency of certain food material; for example, some are due to an insufficient quantity of milk, others to an insufficient carbohydrate supply. Definite disease conditions may originate from a deficiency in the water intake. Occasionally, in the author's opinion, children suffer from nutritional disturbances because they are overfed with particular foodstuffs. The food requirements of children at various ages are also discussed, and the author concludes that the amount of food which a child of certain age requires is an individual matter and depends on variable factors. During febrile disturbances and infections the child takes less food; while under the influence of certain endocrine disturbances and physical activity the child takes more. Climate and season affect not only the energy requirements but the appetite and digestion as well. Aron offers a criticism against the feeding tables and rules that are usually employed, and he believes that in healthy infants the caloric needs that are ordinarily given in the textbooks are too low. For this reason he states that the babies are frequently underfed and acquire nutritional disturbances. In the treatment of diarrhea of young infants he favors the use of buttermilk and protein milk and he describes in some detail the technic of using these detoxicating agents. He is opposed to prolonged starvation in the treatment of diarrheal disturbances and thinks that the feeding of small amounts of the foods mentioned should be given early in the disease. Vitamin deficiency is discussed at some length, as well as alimentary, goat's milk, and postinfectious anemias. The material on these points is briefly arranged and summarized, and the treatment advised consists of a supply of food in vitamins. It must be said that the book presents in a concise manner and in an instructive form the most important facts that relate to the nutritional disturbances of childhood.

MEDICAL INFORMATION IN SICKNESS AND HEALTH. By Philip Skrainka, M.D. With a foreword by W. A. Newman Dorland, A.M., M.D., F.A.C.S., Professor of Gynecology and Obstetrics and Head of the Department of Obstetrics in the Post-Graduate Medical School of Chicago. Leatherette. Price, $7.50. Pp. 577. New York: Coward-McCann, Inc., 1929.

In a previous generation young men earning their way through college used to peddle household medical books from door to door, and the mail-order houses used to list in their catalogues vast tomes prepared by medical nonentities who seemed to be competent to write authoritatively on any subject. The volume by Dr. Skrainka resembles these opuses only in its outward appearance. Guided perhaps by the experiences of the past, the publishers have prepared a heavy work on heavy paper with an imitation leather cover embossed with a torch. However, with the physical appearance the resemblance of the work by Dr. Skrainka to the books that have been mentioned ends.

The author has prepared a household guide which offers much sane and competent advice about practically all the ailments that afflict mankind, which discourses on social medicine and the philosophy of health and disease, and which debunks many current fads in the field of health. The discussions of individual diseases concern the history and symptomatology and, under the heading of treatment, much about prevention and home-nursing. The language is simple and seldom embroidered with literary devices. The book is therefore not so much a volume to be read as one to be regularly consulted in time of need.

The only adverse criticism of this book is the definite prescription of such remedies as Dover's powder or even sodium bicarbonate, which the reader is to take without medical consultation. True, the author disavows any inclination to have his book replace the physician, but the path of safety in the prescription of potent remedies directly to the public has not yet been worked out. Under scarlet fever there is no mention of the work of the Dicks or the preparations resulting therefrom. Even with these errors of omission and commission, however, the volume is about as safe and reliable a work of its scope as is thus far available for the person who wishes a household medical book.

THE PHYSIOLOGY OF LOVE. By George M. Katsainos, Ph.D., M.D. Cloth. Price, $4. Pp. 326. Boston: Privately printed, 1929.

Here is a strange work in the field of human physiology—an admixture of freudianism, physiology, poetry, dithyrambic and erotic imaginings, sexual exultations and what not. The author has set forth his philosophy of the sexual life, which pictures woman as a parasite made neverthless for the sexual relief of man. Presumably the author has read some of Freud since his views reveal freudian inclinations; presumably he has read Havelock Ellis since he seems to aim at the lyric qualities of the Ellis prose. The result is a caricature of scientific writing, an object of curiosity in the field of literature, much as a perpetual priapism might be interesting but nevertheless pathologic and after a while tiresome.

ÉTUDE CLINIQUE ET RADIOLOGIQUE DES CAVERNES TUBERCULEUSES: Spéléologie pulmonaire. Par Dr. Jaquerod. Paper. Price, 30 francs. Pp. 15, with 40 plates. Paris: Masson & Cie, 1928.

This is a clear-cut treatise on cavities of the lungs, their classification, their origin, their treatment and their healing, together with many interesting observations by the author. The term "spéléologie" belongs to a branch of geology and refers to the study of fissures, caverns and gulfs that occur in the interior of the earth. The author designs to apply the term to caverns in the lungs. It is pointed out in the paper that it has been difficult to reconcile clinical observation with postmortem appearances, but, since the advent of the x-rays, the records on the film, being permanent and susceptible of interpretation by competent observers, serve to clarify the subject. Jaquerod divides cavities into three classes or degrees: The cavity of the first class, he says, is characterized radiologically by an annular shadow, relatively indistinct, of which the interior is not completely clear, and clinically by the absence of expectoration; it represents the first phase of the process of elimination of the tuberculous caseous focus, of which the center appears not yet to be destroyed. The cavity of the second class is characterized by a shadow annular in contour and well defined, confining a space uniformly clear; clinically there is mucopurulent sputum which is positive to tubercle bacilli, and anatomically the walls of the cavern are formed by soft pulmonary tissue, recently infiltrated with tubercle. The cavity of the third class is characterized, radiologically, by a circular shadow, generally of large dimensions, or by a clear circle in the midst of a pulmonary field, more or less dark, the case being of the old chronic type, with free positive sputum; anatomically, the cavern has fibrous rigid walls which prevent it from collapsing and which also isolate it from neighboring pulmonary structures. The author also discusses "annular shadows" and deprecates dependence on stereoscopy, holding that the shadows need but a little movement of patient or of screen to show them for what they are, and so, when that has been done there is no need of the stereoscope. Dislocation of the heart to one or the other side is stressed more than it usually is on this side of the ocean, but no more than it deserves. The cure of cavities, false shadows and other interesting phases of the subject are ably treated in this excellent paper. There are forty roentgenograms well reproduced and in excellent relation to the written matter. In one of the last paragraphs

of the article the author remarks that a clinical cure of tuberculosis may be considered to consist in transforming bacilli from a virulent organism into a vaccinial one; a pretty conceit. The book is one of the best on this subject that have appeared in a long time.

A MANUAL OF DISEASES OF THE NOSE, THROAT AND EAR. By E. B. Gleason, M.D., LL.D., Professor of Otology, Medico-Chirurgical College Graduate School of Medicine, University of Pennsylvania. Sixth edition. Cloth. Price, $4.50 net. Pp. 617, with 269 illustrations. Philadelphia: W. B. Saunders Company, 1929.

This covers ear, nose and throat diseases completely in its comparatively small space. After a description of the various methods of examination, as well as an outline of the instrumentarium that is needed, there are chapters on the nose, the pharynx, the larynx and the ear. At the end of the book is a rather long list of various formulas and therapeutic agents used in otolaryngology. Operative indications and procedures are well outlined, and the author shows a rather conservative attitude with reference to the former. The chapter on hearing tests shows the word Rinne spelt with an accent over the e; Rinne is a German name and there should be no accent over the e. In a description of the Schwabach test, the author states that it "consists in comparing the number of seconds that the fork is heard on the mastoid and at the meatus in a normal ear with the time that the fork is heard in these positions by the ear being examined." The Schwabach test is usually performed by placing the vibrating fork on the median line of the vertex and noting the time it is heard as compared with a living control or an objective standard. Bone conduction may, however, be determined by testing by way of the mastoid process and this is done by a good many otologists. The chapter on intracranial complications is quite complete. The whole work is readable and instructive. It is systematically arranged, clearly written, and discusses many of the most recent advances in otolaryngology.

DIE MALARIA IN IHRER BEDEUTUNG FÜR DIE GESCHICHTE ROMS UND DER RÖMISCHEN CAMPAGNA. Eine kulturhistorische Studie. Von Angelo Celli, Professor der Hygiene an der Universität Rom. Herausgegeben von Anna Celli-Fraentzel. Mit einem Geleitwort von Prof. Dr. Henry E. Sigerist. Paper. Price, 12 marks. Pp. 118, with 1 illustration. Leipzig: Georg Thieme, 1929.

The history of the world has been greatly modified by the diseases that afflict mankind. In the history probably no other disease has had such far reaching influence as has been assigned to malaria. The purpose of this volume is to explain the great fall of the Roman Empire by the development of malaria, and to show the necessity for a continued campaign against this disease in Italy. Year by year the story of Rome is told and century by century the influence of malaria on the political and social state of Italy is revealed. Some four hundred literary references have been consulted and, like all good historical works, the essay is thoroughly documented. In his introduction, Professor Sigerist contrasts the garden that surrounds Paris and the meadows that surround London with the marshes that surround Rome. Only modern scientific knowledge has prevented the complete death of Italy, as it made possible the building of Panama and the reclaiming of great portions of Africa. The history of medicine is an inspiration.

THE HARVEIAN ORATION: Cardio-Vascular Diseases Since Harvey's Discovery. Delivered Before the Royal College of Physicians of London on October 18, 1928. By Sir Humphry Davy Rolleston, Bart., K.C.B., M.A., M.D., Regius Professor of Physic, Cambridge. Cloth. Price, 3s. 6d. net. Pp. 149. Cambridge: University Press, 1928.

A charming writer who speaks authoritatively in the field of medicine is fortunate to find his words dressed in as attractive a garb as appears in this volume from the Cambridge University Press. The lecture by Rolleston here presented should be made required reading in every course of internal medicine. Here in brief space is the vast road that has been traversed in our knowledge of the heart and blood vessels since William Harvey drove the initial spade in his De Motu Cordis some three hundred years ago. The author follows the chronological method of consideration and supplements each of his chapters with adequate bibliography. Following a brief introduction to the subject, the chapters cover our knowledge of cardiovascular diseases from the point of view of anatomic observation, unaided clinical observation, examination of patients with the aid of instruments of precision, and physiologic and pathologic experiment. An adequate author index and a subject index complete the work. Here is a classic in its field, one with which teachers may conjure. The fact that a few typographic errors have been corrected in the review copy with pen and ink indicate the mastery and attention to detail that have been put into this book.

QU'EST-CE QUE LA MÉDECINE? Suivi de six autres essais. Par E. Rist, médecin de l'Hôpital Laennec. Paper. Price, 25 francs. Pp. 235. Paris: Masson & Cie, 1929.

This is an interesting collection of essays on quasimedical subjects adapted to the lay as well as the medical reader. The first, "What is Medicine?" shows medicine to be more than the art of healing human ills. The author considers it much as it has come to be understood in America, an art—science—whose function is to prevent disease in the mass. The second essay, the "Diagnosis of Thoracic Diseases before the Invention of Percussion and Auscultation," is a discourse on the difficulties which beset the physician prior to the advent of the accurate means of diagnosis mentioned in the title. "The Progress of Medicine," "Science and Art in Medicine," and the "Hippocratic Oath" are others of the essays. They present nothing that is new to the student of the history of medicine but are nevertheless worthy of a perusal by him, by reason both of the scholarly presentation and of the accuracy of the subject matter. The layman would have no trouble in understanding the author and would doubtless be edified.

Medicolegal

Heart Disease Due to Inhalation of Cement Dust

(Riggs et al. v. Ash Grove Lime and Portland Cement Co. (Kan.), 272 Pac. 153)

Riggs, it was claimed, overtaxed himself in climbing a ladder in the course of his employment, the arteries of his heart gave way, and instant death followed. His widow brought action under the workmen's compensation act. From a judgment in the trial court, the employer appealed to the supreme court of Kansas. The judgment of the trial court was affirmed.

The petition alleged substantially that Riggs, while in the performance of his duties, covering a period of years, breathed cement dust and gases "to such an extent that his lungs were filled." This, it was claimed, resulted in weakness of the arteries of the heart and especially of the aorta, causing the mucous membrane of the lungs and the arteries surrounding the heart to become diseased and weakened. It was while in this condition that, in the discharge of his duties, that he overtaxed himself as stated and the arteries of the heart gave way. On behalf of the employer, it was contended that the petition did not allege any facts showing or tending to show that the death was due to an accident arising out of the employment of the deceased. The supreme court, however, called attention to several decisions previously made by it which supported this claim for compensation. The court had held that one who became overheated and drank ice water, "which caused congestion of the vascular system, which caused his death," died as the result of an accident arising out of and in the course of his employment (*Gilliland* v. *Edgar Zinc Co.*, 112 Kan. 39, 209 Pac. 658). It had held, too, that when a workman had worked for three years in the sacking department of a cement plant, which was a very dusty place, when he was up to the time of his death apparently of good health and spirits, and when at the time of his death, while using a sledge to break rock, he had a pulmonary hemorrhage, from which he died, the injury arose out of his employment within the meaning of the compensation act (*Gilliland et al.* v. *Ash Grove Lime and Portland Cement Co.*, 104 Kan. 771, 180 Pac. 793). The court cited a third case in which it had held that if by weakening resistance or otherwise an accident so contributes to or influences the progress of an existing disease as to cause a disability, it is sufficient to justify an award under that act (*Blackburn* v. *Brick & Tile Co.*, 107 Kan. 722, 193 Pac. 351). The rule announced in the cases cited was held by the court to be applicable in the instant case and the judgment of the court below was affirmed.

Narcotics Not Intoxicating Liquors

(In re Breen (Iowa), 222 N. W. 426; United States v. Breen, 222 N. W. 426)

Breen, a licensed physician, was convicted of violating the "federal statutes and regulations relating to narcotics." His license to practice medicine was suspended by the district court, Jones County, under section 2110, Code of Iowa, 1927, which provides:

> When a physician or pharmacist, licensed under the laws of this state, is convicted in any federal court of this state of a violation of the federal statutes or regulations relating to intoxicating liquors, or to narcotics, and said judgment has become final, the county attorney . . . shall forthwith file in the office of the clerk of the district court of said county a duly certified copy of said judgment and thereupon said district court, or a judge thereof, shall . . . enter an order suspending for a period of not less than one year nor more than five years the license of such physician or pharmacist. . . .

Section 2110 originated as an amendment to a codification bill enacted under the following title: "An act to amend, revise, and codify sections nine hundred twenty (920) to nine hundred fifty-one (951), inclusive, of the Compiled Code of Iowa, relating to the sale and transportation of intoxicating liquors under permits." Breen contended, in an appeal to the supreme court of Iowa, that since this title contained no mention of narcotics, the inclusion in the act of the provisions relating to narcotics was violative of the constitutional provision declaring that every act shall contain but one subject, which subject shall be expressed in the title. Sections 920 to 951, inclusive, of the Compiled Code of Iowa, which were codified by the codification act, made no mention of the words "narcotics" or "narcotic drugs." These sections related solely to intoxicating liquors and were confined in their provisions to permits to pharmacists, to wholesale drug corporations, and to manufacturers. While materia medica may classify alcohol as a narcotic, the court said, legislation regulating the possession, use, and disposition of intoxicating liquors occupies an entirely distinct field from that regulating the use and disposition or prescription of narcotics. While alcohol is a narcotic, its origin, properties, use, and its effects from the popular and legal viewpoint are so different from those of narcotic drugs that entirely different methods of dealing with them are required. A preparation of opium or cocaine, the court continued, whether in solid or liquid form, is not thought of in legislation, or popularly, as an intoxicating liquor. The Harrison Narcotic Act, the duties of physicians and their responsibilities in prescribing narcotics, the revocation of physicians' licenses for disloyalty to such responsibilities, are utterly foreign to the matter of permits to pharmacists, wholesale druggists, and manufacturers to handle intoxicating liquors. The title to the codification act, the court said, was misleading and deceptive and the provision relative to the revocation of a physician's license because of a conviction in a federal court of violation of the federal statutes or regulations relating to narcotics was so alien to the subject-matter, purpose and scope of the codification act as indicated or suggested by its title, as to render unconstitutional that provision. The action of the district court in suspending Breen's license was therefore reversed.

Appendicitis and "Heart Trouble" Attributed to Ptomaine Poisoning

(Arndt et al. v. D. H. Holmes Co., Ltd. (La.), 119 So. 91)

The plaintiffs instituted this suit to recover damages for injuries alleged to be due to contaminated food purchased from the defendant company. The civil district court gave judgment for the plaintiffs for $10,000 and the defendant appealed to the court of appeal of Louisiana.

One of the plaintiffs, Charles Arndt, alleged that his wife bought a cake from the defendant, Sept. 18, 1925, which was unfit for human consumption; that it contained ptomaine poison; that every member of the family who ate the cake became ill; and that two minor children were stricken with ptomaine poison which "infected their appendix as well as their heart." The defendant admitted that a number of customers were made ill with nausea and vomiting from the eating of cakes purchased from it, Sept. 18, 1925, but declared that the condition of the cakes was due to abnormally hot weather. The defendant denied that the cakes caused the appendicitis or heart disease from which the two minor children suffered and claimed that it could be held liable only for such damages as were due to nausea, vomiting or purging.

On the day after the cakes were eaten, Dr. S. was called to attend the two minor children. He found them vomiting and purging, and suffering much pain, especially in the right side of the abdomen. After exhausting the usual methods of relief by ice bags and other means, he concluded that one of the girls had appendicitis. He operated on her under a local anesthetic because "her heart was too bad" to use a general anesthetic. A week afterward the same symptoms of appendicitis developed in the other girl and her appendix, too, was removed under a local anesthetic.

Eight physicians testified in the case. Some were of the opinion that ptomaine poison could not be the cause either of appendicitis or of "heart trouble," others swore it could. With respect to both girls, Dr. S. testified: "Their hearts were rather bad. They both had murmurs, very loud murmurs." After reviewing the evidence the court concluded that the girls were afflicted with dormant chronic appendicitis and "heart trouble" which were superinduced by the eating of the contaminated cakes. The court held that the defendant was liable in damages for waking up the dormant diseased organs but that the amount allowed by the jury in the lower court was excessive. The plaintiffs were entitled to recover, the court said, "only such damages as were the result of the accident, and reasonably contemplated." The judgment of the civil district court was amended by reducing it from $10,000 to $4,000 and, as amended, affirmed by the court of appeal.

Society Proceedings

COMING MEETINGS

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Memphis, Tenn., September 16-18. Dr. James E. Davis, 1825 Geddes Avenue, Ann Arbor, Mich., Secretary.

American Child Health Association, Minneapolis, September 30-October 4. Dr. Philip Van Ingen, 125 East 71st Street, New York, Secretary.

American Electrotherapeutic Association, Indianapolis, September 9-13. Dr. C. C. Vinton, Guildersleeve Ave., Rosedale, New York, Secretary.

American Pharmacological Society, Boston, August 19-23. Dr. E. D. Brown, University of Minnesota Medical School, Minneapolis, Secretary.

American Physiological Society, Boston, August 19-21. Dr. W. J. Meek, University of Wisconsin Medical School, Madison, Secretary.

American Public Health Association, Minneapolis, September 30-October 4. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Secretary.

American Roentgen Ray Society, New York, September 17-20. Dr. John T. Murphy, 421 Michigan Street, Toledo, Ohio, Secretary.

American Society for Experimental Pathology, Boston, August 19-23. Dr. Carl V. Weller, 1020 Ferdon Road, Ann Arbor, Mich., Secretary.

American Society of Biological Chemistry, Boston, August 19-23. Dr. D. W. Wilson, University of Pennsylvania Medical School, Philadelphia, Secretary.

Association of Military Surgeons of the United States, Denver, Colorado, September 26-28. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.

Central States Pediatric Society, Milwaukee, September 27-28. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.

Colorado State Medical Society, Greeley, September 3-5. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.

Delaware, Medical Society of, Farnhurst, October 8-10. Dr. James E. Brayshaw, Medical Arts Building, Wilmington, Secretary.

Federation of American Societies for Experimental Biology, Boston, August 19-23. Dr. Carl V. Weller, 1020 Ferdon Road, Ann Arbor, Mich., Secretary.

Indiana State Medical Association, Evansville, September 25-27. Mr. T. A. Hendricks, Hume-Mansur Building, Indianapolis, Executive Secretary.

Michigan State Medical Society, Jackson, September 17-19. Dr. F. C. Warnshuis, G. R. National Bank Building, Grand Rapids, Secretary.

National Medical Association, Newark, N. J., August 26-30. Dr. W. G. Alexander, 136 West Kinney Street, Newark, N. J., Secretary.

Nevada State Medical Association, Elko, September 27-28. Dr. H. J. Brown, Box 688, Reno, Secretary.

Pacific Association of Railway Surgeons, Reno, Nevada, August 23-24. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.

Pennsylvania, Medical Society of the State of, Erie, September 30-October 3. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

State Medical Society of Wisconsin, Madison, September 10-13. Mr. J. G. Crownhart, 119 E. Washington Ave., Madison, Executive Sec'y.

Vermont State Medical Society, Bellows Falls, October 10-11. Dr. William G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Washington State Medical Association, Yakima, September 3-5. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Western Association of Physical Therapy, Indianapolis, September 9-13. Dr. Charles Wood Fassett, 115 E. 31st St., Kansas City, Mo., Sec'y.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to The Journal in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Annals of Surgery, Philadelphia

90: 1-160 (July) 1929

*Malignant Epithelial Tumors of Neck of Unknown Origin. J. E. McWhorter, New York.—p. 1.
Management of Intra-Oral Cancers at Radium Institute of University of Paris. G. T. Pack, New York.—p. 15.
Treatment of Acute Postoperative Thyroid Toxemia. A. S. McQuillan, New York.—p. 26.
Fibrosarcoma of Thyroid: Two Cases. W. O. Johnson, Louisville, Ky.—p. 29.
*Homotransplantation of Thyroid Tissue in Cases of Complete Thyroidectomy for Cancer: Case. S. O. Portugalov, Rostov-on-Don, Russia.—p. 37.
*Primary Hypernephroma of Liver. T. L. Ramsey, Toledo, Ohio.—p. 41.
Spread of Bacteria from Gallbladder to Liver. W. Martin, New York.—p. 47.
Surgery of Pancreas. A. Stillman, 2d, New York.—p. 58.
*Left Vagus Section and Partial Gastrectomy for Duodenal Ulcer with Hyperacidity. E. Klein, New York.—p. 65.
*Factors of Safety in Resection of Stomach for Gastroduodenal Ulcers. R. Lewisohn, New York.—p. 69.
*Late Results in Perforated Gastroduodenal Ulcers. L. Urrutia, Madrid, Spain.—p. 73.
*Resection of Proximal Duodenum and Pyloric Sphincter for Multiple Duodenal Ulcers. T. M. Joyce, Portland, Ore.—p. 79.
*High Vein Ligation in Thrombo-Angiitis Obliterans: Nine Cases. G. W. Van Gorder, Peking, China.—p. 88.
*Reconstruction of Hip Joint in Congenital Dislocations. W. J. Merrill, Philadelphia.—p. 106.
Transplantation of Ureters for Irreparable Bladder Injury. W. L. Peple, Richmond, Va.—p. 110.
Branchial Cysts of Parotid Gland. W. F. Cunningham, New York.—p. 114.

Malignant Epithelial Tumors of Neck of Unknown Origin.—McWhorter asserts that malignant epithelial tumors of the neck are far more common than is generally supposed, and are frequently mistaken for Hodgkin's disease and lymphosarcoma. Practically all the tumors studied by him occupied an area behind and below the angle of the jaw and in the majority of cases were unilateral. Their origin was unknown. Diagnosis is extremely difficult; in most cases it can be made only by microscopic sections, as the clinical observations are frequently not sufficiently characteristic to differentiate it from other masses in the neck. When, in a mass located below and behind the angle of the jaw, there is a history of a gradual or rapid growth, this tumor should always be considered as a possibility. Treatment, either by excision or by irradiation, seems to be equally unsatisfactory. Excision in particularly favorable cases, or as a palliative measure to relieve symptoms, may at times be considered, but the difficulties of this operation cannot be overestimated. In most cases the prognosis is bad, as the tumor when first seen is inoperable.

Homotransplantation of Thyroid Tissue in Thyroidectomy for Cancer.—In the case cited by Portugalov the transplant was taken from a patient with compatible blood whose goiter had to be removed. The transplantation was accompanied by an anastomosis of the superior thyroid artery of the transplant to the patient's inferior epigastric artery. A fortnight after the operation, all her symptoms of myxedema had disappeared. After she had been quite well for six months, a metastasis of cancer to the liver was suspected and a course of roentgen treatments was applied. Within a few weeks all her symptoms of myxedema came back. She returned to the clinic where, seven months after the first transplantation, a second one was done. This operation was done at the site of the original one in order that the condition of the thyroid tissue transplanted seven months previously might be noted. Macroscopicaliy, no marks of the thyroid isograft could be detected. Several bits of surrounding tissue were removed for microscopic examination which on investigation did not reveal any traces of transplanted thyroid gland, but showed only scar, muscular tissue and fat.

Primary Hypernephroma of Liver.—A case of malignant primary hypernephroma of the liver is reported by Ramsey, having developed in a man, aged 57. The growth was in the right lobe, well encapsulated and removed by surgery. No great amount of bleeding attended the operation, and after the liver border had been packed around with iodoform gauze and rubber tissue the wound was closed in layers in the usual manner, the gauze and rubber drain being left in. The patient died the same day at 8:30 p. m. There was no elevation of the temperature and death was most probably due to hemorrhage from the liver. Autopsy was not permitted.

Left Vagus Section and Partial Gastrectomy for Duodenal Ulcer.—Section of the left vagus at the level of the cardia in addition to partial gastrectomy has been performed by Klein in eight cases of duodenal ulcer with marked hyperacidity. Whereas after partial gastrectomy alone only one fourth of the patients are anacid, in eight in whom in addition the left vagus was sectioned all are at present anacid.

Safety Factors in Resection of Stomach for Gastroduodenal Ulcers.—Experience with gastric resection in gastroduodenal ulcers has convinced Lewisohn that the end-results of partial or subtotal gastrectomy are far superior to those of simple gastro-enterostomy with or without excision of the ulcer.

Late Results in Perforated Gastroduodenal Ulcers.—Study of seventy-seven cases leads Urrutia to conclude that in cases of acute duodenal and gastric perforation, a simple suture covers the "vital indication" with the minimum of risk, besides effecting an absolute cure of the ulcer in at least 50 per cent of the cases. In the other 50 per cent, the ulcers continue in their active stage until a new perforation or malignant degeneration occurs. Therefore, if the symptoms persist the patient should be subjected to a partial gastrectomy, or gastro-enterostomy. The latter procedure is recommended in cases of healed pyloric or duodenal ulcer with stenosis. Primary gastro-enterostomy with suture of the perforation exposes the patient to the risks of a marginal or jejunal ulcer. Partial primary gastrectomy is indicated only in cases of subacute perforation. Urrutia does not agree with those who consider the radical operation the proper method for the cure of jejunal perforations. He prefers a simple closure of the perforation and sometimes a subsequent partial or subtotal gastrectomy with jejunal resection. He employed this method in one case of acute jejunal perforation. The patient is perfectly well ten years after the third operation (subtotal gastrectomy).

Resection of Duodenal and Sphincter for Multiple Duodenal Ulcers.—A complete resection of the proximal end of the first portion of the duodenum, including the ulcerative lesions, and the pyloric ring of the stomach with end-to-end anastomosis is done by Joyce, whenever possible, in all cases of multiple duodenal ulcers. This operation has been performed five times with complete and permanent cure in every case except one. Convalescence is smooth and the postoperative reaction slight compared with gastro-enterostomy, gastric resections and other surgical procedures for the cure of lesions of the duodenum. There is apparently no more postoperative risk or shock than in the Judd pyloroplasty.

High Vein Ligation in Thrombo-Angiitis Obliterans.—Van Gorder feels that high ligation of the vein in the treatment of thrombo-angiitis obliterans is justified, and is to be highly recommended. Of nine cases of this disease treated by this method, pain was controlled and gangrene arrested or improved in eight. Ligation of the external iliac vein does not appear to have any marked advantage over ligation of the superficial femoral vein in Scarpa's triangle, so far as could be determined by postoperative clinical observation in this series of cases.

Reconstruction of Hip-Joint in Congenital Dislocations.—Merrill transplants a rectangular segment of ileum over the head of the femur. It comprises the entire thickness of the bone. It is displaced upward and outward and tilted outward over the head of the femur.

Archives of Surgery, Chicago

19: 1-168 (July) 1929

Surgical Applications of Therapeutic Venous Obstruction. B. Brooks, Nashville, Tenn.—p. 1.
Structure of Bone. H. L. Jaffe, New York.—p. 24.
Surgery of Esophagus. J. H. Saint, Rochester, Minn.—p. 53.
*New Abdominal Incision. J. T. Mason, Seattle.—p. 129.
*Operative Relief from Pain in Lesions of Mouth, Tongue and Throat. W. E. Dandy, Baltimore.—p. 143.
Bronchobiliary Fistula. M. G. Seelig and J. J. Singer, St. Louis.—p. 149.
*Endometrioma of Terminal Ileum, Appendix and Cecum. F. N. G. Starr, Toronto.—p. 152.

New Abdominal Incision.—Mason has devised what he terms a "three in one incision," because while the abdomen is open it is really one continuous incision but after closure the effect is that of three distinct suture lines. He asserts that this incision lessens the number of postoperative hernias, because after closure the effect is that of three short incisions. Also, only a few twigs of nerves need be severed and no muscle fibers are cut. One limb of the incision is placed over the left rectus muscle. It extends from the costal arch to just above and to the left of the umbilicus. Then it turns at a right angle to the middle of the right rectus, and finally, again at an angle, downward over this muscle for a short distance. The muscles are rolled outward and the peritoneum is opened behind the left rectus muscle. A transverse incision through the peritoneum just above the umbilicus completes the incision. This gives ample exposure for any operation in the upper part of the abdomen and allows the operator to reach and remove a retrocecal appendix in the lower right quadrant. When the surgeon is ready to close the wound, the transverse incision is first closed before the peritoneum is sutured. The suture is made after the manner of the Mayo repair of umbilical hernia, by secure imbrication of the upper with the lower flap with from two to three mattress sutures. The healing of the wound is facilitated by the flexed posture that has been advocated by Farr. The peritoneum of the upper part of the wound is then closed separately. The muscles are allowed to drop back in their sheaths and the aponeuroses are sutured in the usual manner.

Operative Relief from Pain in Lesions of Mouth, Tongue and Throat.—An operation is presented by Dandy for the complete and permanent relief from pain associated with chronic, benign and malignant lesions of the mouth, nose, tongue and throat. When the pain is referable to the sensory domain of both the glossopharyngeal and the trigeminal nerves on one side, there is no other way of permanent relief. Under such conditions the glossopharyngeal nerve and the sensory root of the trigeminus can be divided at the brain stem (subcerebellar approach), the two nerves being exposed simultaneously in the same operative field. Both nerves can be divided easily, quickly and with little danger to life or function.

Endometrioma of Terminal Ileum, Appendix and Cecum.—The extraordinary feature of Starr's case is that apparently the uterus and adnexa were normal and there was no sign of a chocolate cyst of the ovary. The inference is that at some time the appendix had been in contact with the fimbria and thus some endometrial cells had come in contact. Possibly it may have become adherent and as the obstruction increased and peristalsis became more vigorous, it was detached, although there was no sign of a recent adhesion on the part removed.

Johns Hopkins Hospital Bulletin, Baltimore

45: 1-74 (July) 1929

*Hypophyseal Tumor with Associated Tumor-Like Enlargement of Parathyroids and Islands of Langerhans: Case. P. C. Lloyd, Baltimore.—p. 1.
John Hunter, His Enemies and His Friends. M. S. Guttmacher, Baltimore.—p. 15.
*Bundle Branch Block Confirmed by Pathologic Study: Case. H. B. Taussig, Baltimore.—p. 40.
Nervous Control of Electrical Resistance of Skin. C. P. Richter, Baltimore.—p. 56.

Hypophyseal Tumor with Enlargement of Parathyroids and Islands of Langerhans.—A case is reported by Lloyd in which there was a large adenoma of hypophyseal tissue associated with adenoma-like enlargements of the parathyroid glands and the Islands of Langerhans, and with moderate enlargement of the suprarenals and ovaries.

Bundle Branch Block Confirmed by Pathologic Study.—In the case reported by Taussig there was a long standing chronic rheumatic infection with severe myocardial injury. The first definite evidence of left bundle branch block occurred only a few hours before death. Histologic examination of the left branch of the bundle of His showed extensive scarring, and a very slight actual break in the continuity of the bundle.

Kentucky Medical Journal, Bowling Green

27: 243-282 (June) 1929

Headache. E. E. Smith, Bardwell.—p. 246.
Adenocarcinoma of Cecum, Congenital Hypertrophic Pylorostenosis. J. G. Sherrill, Louisville.—p. 248.
Sarcoma of Jaw in Child, Aged Two and One-Half Years. L. W. Frank, Louisville.—p. 250.
Congenital Obliteration of Gallbladder with Atresia of Extrahepatic Bile Ducts and Ampulla of Vater. T. C. Smith and R. T. Ball, Louisville.—p. 252.
Macroscopic Diagnosis of Malignant Lesions. R. P. Ball, Louisville.—p. 253.
Group Practice. R. C. Burrow, Cunningham.—p. 257.
Diagnosis and Treatment of Diseases of Accessory Sinuses of Nose. J. F. Dunn, Arlington.—p. 258.
Heredity in Mental Diseases. A. M. Lyon, Frankfort.—p. 260.
Peptic Ulcer. C. W. Justice, Ludlow.—p. 262.
Resection of Portion of Small and Large Intestine: Case. F. P. Strickler, Louisville.—p. 265.
Cancer of Colon. J. R. Wathen, Louisville.—p. 267.
Prevention of Tuberculosis by Public Health Methods and Science of Medicine. H. P. Sights, Paducah.—p. 274.
Encephalitis Following Measles. J. W. Bruce, Louisville.—p. 278.

New England J. Medicine, Boston

1: 1315-1362 (June 27) 1929

Robert W. Smith's Description of Generalized Neurofibromatosis (1849). J. F. Fulton, Oxford, England.—p. 1315.
*Association of Gallbladder Disease and Heart Disease. C. B. Leech, Baltimore.—p. 1318.
Health Work in Industry. H. G. Murray and E. Coolidge, Framingham, Mass.—p. 1321.
Treatment of Pernicious Anemia, Especially by Liver. R. I. Lee, Boston.—p. 1324.
Progress of Nutrition. F. L. Burnett, Boston.—p. 1329.

Association of Gallbladder and Heart Disease.—One hundred and sixteen operative patients with gallbladder disease were studied by Leech with particular reference to the presence or absence of associated lesions of the heart. Approximately 80 per cent of the patients were females. Approximately 70 per cent were definitely obese. Since obesity occurred in 70 per cent of the total number of females and in only 37 per cent of the total number of males, it is suggested that the preponderance of females in this series of patients may be associated with the preponderance of female obesity. Approximately the same percentage of acute and chronic lesions occurred in obese patients. Fifty per cent of the deaths occurred in patients who had lesions of the heart; yet only about 25 per cent of the total number presented heart lesions. This seems to indicate that there is no more of an association between heart disease and gallbladder disease than the incidental one to be expected with any series of patients of the same ages. The patients with heart lesions who died showed abnormal electrocardiograms but nothing to indicate a particular association with gallbladder disease. These particular patients would have been probably no better or poorer risks with any other complication than gallbladder disease. That 50 per cent of the fatal cases showed marked jaundice is considered an indication of the severity and length of the existence of the infection. There were strikingly few bradycardias and little in the effect of operation on the pulse rate to indicate that an increase or a diminution of the bile salts circulating in the blood affects consistently the rate or rhythm of the heart beat. Approximately 36 per cent of the patients gave a history of definite precardiac disease, differing slightly or not at all from any other series of patients of the same age incidence. In five patients a cardiac murmur disappeared after operation, indicating no more frequent functional insufficiency of the myocardium in this study than would be expected from any other group of patients with severe organic disease and undergoing major operative procedure. Electrocardiographic studies did not reveal anything significant, with the exception of a predominant levogram in 70 per cent of the patients studied by electrocardiogram. Thirty per cent of these presented clinical enlargement of the heart, whereas 62 per cent of them were obese, suggesting a relationship between obesity and the levogram. There is a suggestive relationship between chronic cholecystitis, heart enlargement and the levogram.

There was nothing characteristic in the bacteriologic study of the gallbladder contents. Many of the gallbladders seemed to be sterile. There was nothing in the study of the walls of the gallbladders to suggest inflammation of the rheumatic type. The general conclusion is that there is no definite relationship between gallbladder disease and disease of the cardiovascular system. The patient with gallbladder disease who also has organic lesions of the heart is no poorer risk than he would be for any other operative procedure of similar severity. A small percentage of patients with gallbladder disease may show the effect on the heart muscle of increase or diminution of the bile salts in the blood. There is a suggestive relationship between obesity and gallbladder disease.

Physical Therapeutics, New York

47: 371-418 (July) 1929

Incandescent Lamp as Source of Ultraviolet Radiation. A. L. M. Dingee, Cambridge, Mass.—p. 371.
Dosimeters for Ultraviolet Radiation. H. Goodman, New York.—p. 376.
Principles of Hydrotherapy. W. H. Dieffenbach, New York.—p. 381.
Physiologic Foundation for Treatment of Cardiovascular Disease. H. F. Wolf, New York.—p. 387.
Instruction Model of High Frequency Apparatus. R. Kovacs, New York. —p. 398.

Radiology, St. Paul

13: 1-94 (July) 1929

Roentgen Diagnosis of Intrathoracic Neoplasms. J. T. Farrell, Jr., Philadelphia.—p. 1.
Significance of Small Intestinal Stasis. K. Kornblum, Philadelphia.—p. 17.
Incipiency of Disease. W. W. Wasson, Denver.—p. 29.
Present Status of Cancer Problem. G. A. Soper, New York.—p. 36.
Radiodermatitis: Case. U. V. Portmann, Cleveland.—p. 43.
Generalized Osteitis Fibrosa. I. S. Hirsch, New York.—p. 44.

Southwestern Medicine, Phoenix, Ariz.

13: 247-290 (June) 1929

Empyema Problem. J. Alexander, Ann Arbor, Mich.—p. 247.
Review of 3,473 Fractures. J. E. Bacon, Miami, Ariz.—p. 250.
Relationship of Pediatrics and Psychiatry. F. P. Gengenbach and F. G. Ebaugh, Denver.—p. 256.
Clinical Signs and Management of Chronic Cholecystitis. F. J. Milloy, Phoenix, Ariz.—p. 262.
Lumbar Spinal Anesthesia. E. P. Palmer, Phoenix, Ariz.—p. 270.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Practitioner, London

123: 1-96 (July) 1929

Pathogenesis and Treatment of Asthma. A. F. Hurst.—p. 4.
Asthma: Causation by Occult Sepsis. W. Willcox.—p. 13.
Nasal Factor in Treatment of Asthma. J. Dundas-Grant.—p. 18.
Diagnosis and Treatment of Climate Asthma. W. S. van Leeuwen.—p. 27.
Origin of Spasmodic Asthma. W. E. Dixon.—p. 35.
Tissue Damage as Factor in Asthma Syndrome. J. Freeman.—p. 43.
How Should Practitioner Diagnose and Treat Bronchial Asthma? K. Hansen.—p. 52.
Asthma: Toxic Condition. J. Adam.—p. 62.
Id.: Vasomotor Neurosis.—p. 68.
Types of Asthma. F. Coke.—p. 73.
Treatment of Asthma in Adult. J. André.—p. 82.
Nature and Treatment of Asthma. J. E. R. McDonagh.—p. 89.

China Medical Journal, Shanghai

43: 553-654 (June) 1929

Story of Nicholas Culpepper, Astrologer-Physician. R. Kipling.—p. 553.
Foreign Bodies in Esophagus. J. Hua Liu.—p. 556.
Amebiasis. T. B. Dunn.—p. 564.
*Fetal Peritonitis. A. I. H. Wong and C. H. Hu.—p. 578.
Scarlet Fever. B. Koo.—p. 592.
Radical Amputation of Breast with Cautery. J. A. Snell.—p. 597.
Incidence of Malignancy at Hospital for Chinese. M. E. McDaniel.—p. 601.
Causes of Death for China. J. B. Grant and I. C. Fang.—p. 604.
Ovarian Cysts. G. T. Tootell.—p. 608.
Leprosy in Peripheral Nerve. R. M. Wilson.—p. 617.
Useful, Simply Constructed Staining Rack. R. F. Feemster.—p. 619.

Fetal Peritonitis.—Wong and Hu report two cases of fetal peritonitis with spontaneous perforation of the ileum. A woman, aged 29, was admitted to the hospital in labor, with a child partially delivered. The abdomen of the woman was of unusually large size and she had been suffering for the last three months of her pregnancy from dyspnea associated with edema of the ankles and feet. Twenty-two days before term the membranes ruptured spontaneously at 9 p. m., and a large quantity of fluid drained away. At 6 o'clock the next morning labor pains started. They were severe and dragging in character. Finally the child was born spontaneously as far as the neck. Thirty minutes later the shoulders and arms were out. In spite of violent uterine contractions and forcible traction by the midwife, no further progress was accomplished, and the child died in the meantime. The patient was at once anesthetized with ether. On introducing the hand into the vagina it was discovered that the child's abdomen was greatly distended, causing the dystocia. The abdomen was perforated and a large amount of bile stained fluid drained away. After this, the extraction of the child was very simple. The fetus showed little change from the normal, save in the abdomen, where there had been perforative peritonitis of some standing. The cause of the perforation was quite obscure, and the perforation did not show any signs of a recent acute inflammatory process. In the second case the woman's abdomen was greatly distended. A diagnosis of hydramnios was made. The child was expelled spontaneously but died shortly after it was born. It was normal in every way except that it had suffered some time before birth from perforative peritonitis, the perforations being in the ileum and presenting no signs of recent acute inflammation.

Bulletins et Mém. de la Soc. des Chirurgiens de Paris

21: 265-308 (April 19) 1929

Reconstruction of Roof of Acetabulum with Bone Transplant. H. Judet.—p. 269.
Tuberculous Osteitis of Lower End of Radius. C. Rœderer.—p. 274.
*Abscess of Uterus. Haller.—p. 276.
Fractures of Patella. A. Trèves.—p. 282.
*Periareolar Transpectoral Costal Mastopexy. Dartigues.—p. 287.
Epithelioma of Tongue in a Woman. P. Barbet.—p. 290.
Fracture of Tibial Tuberosity and Rupture of Medial Meniscus. E. Bressot.—p. 291.
Transarticular Route for Exposing and Treating Certain Fractures of Lower End of Femur. E. Juvara.—p. 297.
Acute Perforation of Peptic Ulcer. Moncany.—p. 301.

Abscess of Uterus.—Haller reports a case of intraparietal abscess of the uterus in a woman, aged 21. Four days after a normal labor the patient had fever and several chills. At that time the only treatment given was four subcutaneous injections of stock vaccine. The patient's condition improved and four weeks after the birth of the child she was able to resume her housework. During all this time, however, she suffered a great deal from pain in the hypogastrium and presented a profuse, bad-smelling discharge. Ten days later her condition became worse. Abdominal palpation revealed a definite defensive rigidity in the hypogastrium and in the lower part of the right iliac fossa. On bimanual examination the uterus was found to be much increased in size (volume that of a two months' gravid uterus), soft and extremely painful. Three days later the patient was operated on and an abscess the size of an orange was found in the anterior wall of the uterus. Through a perforation in the wall of the abscess pus had escaped into the peritoneal cavity. Subtotal hysterectomy and appendectomy were performed and a denuded area of the cecum was peritonized. The patient made an uneventful recovery and when seen several weeks later was in excellent health.

Periareolar Transpectoral Costal Mastopexy.—Dartigues describes a technic of fixation of the breast to the underlying rib (usually the fourth) through the pectoral muscles by means of a small curved incision in the upper part of the areola which gives access to the superior pole of the gland. He believes that this technic would be applicable to other methods of breast reconstruction.

Presse Médicale, Paris

37: 733-748 (June 5) 1929

Hemoptysis and Vasomotor Disturbances. F. Bezançon and A. Jacquelin.—p. 733.
*Marked Auto-Agglutination of Blood Corpuscles. E. Rist.—p. 737.

Marked Auto-Agglutination of Blood Corpuscles.—Rist gives the case histories of two patients in whom the auto-agglutination of their blood corpuscles was so great that it was impossible to count them. The first patient, a woman, aged 60, complained only of generalized itching of the skin. No other pathologic condition was found, but in the course of the system-

atic examination the author, on taking a sample of blood for a blood count, noted that the patient's blood broke up in the pipet into particles that were visible with the unaided eye. Microscopic examination of the blood in a hematimeter revealed that the blood corpuscles were so agglutinated that they could not be counted. The dilution of the patient's blood with serum from other persons and even with serum from the patient's own blood did not stop the phenomenon. Examination of several cubic centimeters of the patient's blood revealed that the coagulation was not retarded and was accompanied by sedimentation of the corpuscles. In blood defibrinated with glass beads the sedimentation occurred with great rapidity; after a few seconds the corpuscles had dropped to the bottom of the Erlenmayer flask and formed a homogeneous and viscous mass sharply delimited from the overlying serum. Examination of the serum of this patient revealed that it did not agglutinate corpuscles from other persons. The second instance occurred in a girl, aged 18, with chlorosis. In this patient, also, the author detected the phenomenon of auto-agglutination in the mixture in the pipet; examination of the mixture under the microscope showed that the blood corpuscles were so agglutinated that they could not be counted. Under treatment with iron the symptoms of chlorosis disappeared but the auto-agglutination of the blood corpuscles persisted.

Gazzetta degli Ospedali e delle Cliniche, Milan

50: 401-432 (March 31) 1929

Leukemia from Roentgen Rays. L. Lazzarini.—p. 401.
*Pseudotuberculosis of Genitalia. M. Colombano.—p. 403.
*Palpatory Method for Delimitation of Cardiac Area. G. Mauro.—p. 404.
Pathology and Therapy of Ear. T. Della Vedova.—p. 407.

Pseudotuberculosis of Genitalia.—Colombano's patient, a man, aged 49, was admitted with an accepted diagnosis of left tuberculous orchiepididymitis. He had had exudative pleuritis three years previously, but had apparently fully recovered. The patient asserted that he had never had syphilis or any other venereal disease. Eleven months previously he had been operated on for left inguinoscrotal hernia. He was dismissed as cured twelve days after the operation. Two weeks previous to admission a vague sense of weight and some pain developed in the groin and the left testis. Cold compresses, various ointments, and the use of a suspensory were all without result. On the contrary, a constant increase in the left scrotal bursa and more intense pain were noted. A health officer whom the patient consulted sent him to the hospital with a diagnosis of tuberculous epididymitis with symptoms of hydrocele. When Colombano saw him, the swelling of the left side of the scrotum was evidently due to a fluid effusion. The testis was of almost normal volume, of very slightly increased consistency and not exceedingly painful on pressure. The epididymis was enlarged, hard and painful but smooth and free from adhesions with the walls of the scrotum. The cord was thickened and painful; the vas deferens was easily detected, hard and of increased caliber; about 2 cm. below the external inguinal ring there was a swelling, the size and shape of a large pea, and hard and fibrous; on palpation it appeared to be a nodule forming a continuation of the vas deferens itself. Pressure at this point revealed considerable soreness. The urine was normal in its physical, chemical and bacteriologic characters. The Wassermann reaction was negative. A diagnosis of epididymitis and deferentitis, with secondary symptoms of hydrocele, was reached. Colombano performed an operation. A longitudinal incision 10 cm. long was made in the uppermost third of the scrotum, with the center just over the described nodule. On incising the tissues about the cord, the operator found a knotted and twisted ball of silk suture (size no. 6), which was still in good condition. Eversion of the sheath as in the Jaboulay operation for hydrocele was carried out, and after a careful cleansing of the inflammatory focus, the site of the foreign body, and the establishing of perfect hemostasis, the operative wound was closed with a few silkworm-gut sutures. There was no reaction in the incision or in the deeper tissues. In ten days, the patient was dismissed as cured.

Palpation Method of Maurizio Ascoli for Determination of Limits of Cardiac Area.—Mauro recalls that the percussion method commonly used for the determination of the limits of the cardiac area is subject to error, as anatomic and roentgenologic data have often shown. As an effective supplementary test, Mauro recommends the palpation method of Ascoli. The examinee assumes a sitting posture, with the chest inclined slightly forward, while the examiner, who sits in front of the patient, presses the tips of the index and middle fingers of the left hand (flexed at the metacarpophalangeal joint) first in the third and then in the second intercostal space of the examinee, close to the sternum. At the same time, the patient is asked to draw a long breath and then to expire forcibly and cease breathing. At this point, the examiner, with eyes closed, concentrating all his attention on the area being explored, will note at a certain moment a peculiar sensation of beating from behind the thoracic wall. The finger tips must be pressed fairly tightly against the patient's chest and the examiner must listen intently. Practice is necessary to secure the best results. Mauro describes also his own modified technic. In many cases, he applied the percussion method, and, as a rule, the results coincided. The palpation method cannot be applied to all subjects. Those who are lean, with wide intercostal spaces and slightly developed thoracic musculature, are the best adapted to the method.

Rivista di Patologia e Clin. della Tuberculosi, Bologna

3: 173-264 (March 31) 1929

*Transplacental Transmission of Tuberculous Ultravirus. L. Ajello.—p. 173.
Researches on Value of Sulphuric Acid in Cultural Procedures for Diagnosis of Tuberculous Processes. C. Verdina.—p. 190.
Rare Injurious Effects of Artificial Pneumothorax. A. Campani.—p. 202.
Present Status of Question of Preventive Vaccination Against Tuberculosis. A. Omodei Zorini.—p. 209.
Nitrogen Exchange and Mineral Exchange in Pulmonary Tuberculosis. G. Gherardini.—p. 219.
Chemotherapy of Pulmonary Tuberculosis. U. Carpi.—p. 247.

Transplacental Transmission of Tuberculous Ultravirus.—Ajello recalls that the probable existence of a filtrable stage of the tuberculous virus was first pointed out by Fontes in 1910. This opened up new fields of investigation in the pathology of tuberculosis. Ajello gives a comprehensive history of researches on the subject since 1910, and concludes that the question of the filtrability of the tuberculous virus, and, in particular, its transplacental transmission if there is a filtrable virus, needs the support of further studies and experiments. Many authors, such as Petragnani and Dessy, do not regard the existence of a tuberculous ultravirus as fully established.

Deutsche medizinische Wochenschrift, Berlin

55: 859-898 (May 24) 1929

*Reduced Capacity of Gallbladder for Concentrating Bile in Typhoid and Other Communicable Diseases. K. Westphal, G. Soika and W. Mann.—p. 860.
*Artificial Immunization Against Tuberculosis. O. Ziegler.—p. 863.
*Indications for Malaria Therapy. G. Stümpke.—p. 865.
Prognosis in Necrosis of Pancreas and in Pancreatitis. J. Oehler.—p. 866.
Experiences in Treatment of Fractured Bones. M. Kappis.—p. 868.
*Diagnosis of Rapidly Fatal Diseases in Early Infancy. K. Blühdorn.—p. 870.
*Relation Between Sugar Content of Blood and of Urine. E. Steinitz.—p. 871.
Social Significance of Pseudohermaphrodism and Similar Malformations. B. Valentin.—p. 873.
First Treatment in Acute or Chronic Retention of Urine. G. Praetorius.—p. 875.
Final Results of Bloodless Treatment in Congenital Dislocation of Hip Joint. P. Bade.—p. 878.
Clinical Significance of Sedimentation Reaction of Blood Corpuscles. R. Gantenberg.—p. 879.

Reduced Capacity of Gallbladder for Concentrating Bile in Typhoid and Other Communicable Diseases.—Westphal et al. point out that in nearly all serious communicable diseases the functions of the internal organs are somewhat disturbed. During a typhoid epidemic in 1926 and in cases of typhoid appearing sporadically, they noted that in these patients the gallbladder did not function properly. Examinations were performed to test the bilirubin and cholesterol content of the bile in forty-seven patients with typhoid. A reduced capacity of the gallbladder for concentrating bile was observed in the majority of cases. This functional deficiency was most pronounced during the period of the highest fever and shortly thereafter. In the convalescing patient it generally disappeared. Histologic studies, which were made on the gallbladder of patients who had died during the most severe stage of typhoid,

revealed an inflammation. Researches made on twenty-five patients with other communicable diseases such as pulmonary tuberculosis, pneumonia, septic endocarditis, scarlet fever and influenza revealed this reduced capacity of the gallbladder for concentrating bile in only three cases.

Artificial Immunization Against Tuberculosis.—Ziegler discusses immunization with Calmette's B C G. He thinks that this method is not entirely without danger. Moreover, its efficacy has not been definitely established. Concerning Langer's experiments with killed tubercle bacilli, the author states that the immunizing value of this method is slight. He assumes that artificial immunization can be valuable only if it has the same effect as the natural first infection to which 80 or 90 per cent of all human beings are exposed during childhood. So far it has not been definitely decided whether artificial immunization against tuberculosis is necessary and whether it should be recommended.

Indications for Malaria Therapy.—Stümpke points out that in the various forms of metasyphilis, particularly in paresis, malaria therapy has brought good results. In recent years efforts have been made to employ it also in the treatment of other diseases, particularly in gonorrhea. The author advises that it should be used with discrimination, because it involves great dangers. The mortality is comparatively high, the infectiousness of malaria cannot be entirely disregarded and it is often difficult to check the malaria. It is best to give this treatment only in specially equipped clinics. It is also necessary to limit malaria therapy to cases of paresis and refractory cerebrospinal syphilis. In the beginning stages of syphilis and in other diseases it should not be employed.

Diagnosis of Rapidly Fatal Diseases in Early Infancy.—Blühdorn states that in cases of heat stroke, spasmophilia or peritonitis, the diagnosis is usually not difficult. However, there are some rapidly fatal cases in which status thymicus is often thought to be the cause of death. Postmortem examinations have proved that in such cases death is often due to primary cardiac hypertrophy with interstitial myocarditis. The usual symptoms in such patients are labored, accelerated respiration, lack of appetite, vomiting, pale or slight cyanotic color of the face, weakness and restlessness. Examination reveals enlargement of the heart, especially toward the right, and an engorged liver. The disease develops suddenly; it generally occurs toward the end of the first year. The author also points out that fulminating communicable diseases are often the cause of these sudden deaths. During epidemics the diagnosis is usually not difficult. If they occur sporadically, however, the problem is often more difficult. The author mentions particularly acute anterior poliomyelitis. He gives a detailed report of two cases. He also emphasizes the practical significance of a correct diagnosis in these children's diseases. Of three serious cases which had been recognized as myocarditis and in which the proper treatment had been given, it was possible to effect a cure in two.

Relation Between Sugar Content of Blood and of Urine.—Steinitz examined 120 diabetic patients to determine the "threshold value" of the sugar content of the blood, which is the limit of concentration at which it goes over into the urine. In comparing the results of his experiments, he found great fluctuations. He observed that the more serious the case, or the poorer the process of metabolism, the higher was the "threshold value" of the sugar content of the blood. In severe cases it was about as high as in persons with normal metabolism; in minor cases of diabetes it was lower. The author states that by careful treatment it is possible to reduce this "threshold value" to about the level of the less severe cases. If the urine has become free of sugar, the treatment should aim to reduce the limit of concentration of the sugar content of the blood. It is, however, not absolutely necessary to reach the normal degree of concentration.

Zentralblatt für Chirurgie, Leipzig

56: 1281-1344 (May 25) 1929

Use of Tribromethanol in Tetanus. K. Lindemann.—p. 1282.
*Retroperitoneal Mesenteric Hernia with Incarceration of Entire Small Bowel: Resection of Sac: Cure. C. Flechtenmacher.—p. 1284.
Appendectomy Under Local Infiltration Anesthesia. A. W. Wischnewsky. —p. 1286.
*Case of Traumatic Hernia. R. Herbst.—p. 1291.
*Roentgen Diagnosis of Perforated Gastric Ulcer. F. Kudlek.—p. 1293.
Treatment of Ankylosis of Shoulder Joint by Means of Abduction Plaster Cast. C. E. Jancke.—p. 1298.
New Electric Cautery. H. Scherer.—p. 1300.

Retroperitoneal Mesenteric Hernia.—Flechtenmacher relates the case of a man, aged 38, who suddenly experienced a very severe pain in the midportion of the abdomen, with vomiting. Other symptoms of intestinal occlusion developed and the patient was referred for operation. When the abdomen was opened a large cystic tumor was seen but intestines were not visible. The cyst, on being opened, was found to contain all of the small intestine, distended but not gangrenous. The sac of this hernia had developed retroperitoneally in the mesentery. The right colic artery lay in the rim of the sac opening. The author found only thirty similar cases recorded in the literature.

Real Traumatic Hernia.—Herbst reports the case of a man riding on a bicycle who, while attempting to pass a truck laden with lumber, collided with the end of a board projecting from the load, striking the right lower part of his abdomen rather severely. He immediately felt such severe pain that he was unable to continue his ride. The next day Herbst saw him. On examination all the symptoms of an inguinal hernia were found. At operation the aponeurosis of the external oblique muscle was seen to be torn for a distance of several inches, thus favoring the formation of an inguinal hernia, which in this case was certainly of traumatic origin.

Diagnosis of Perforated Gastric Ulcer.—Kudlek relies on the roentgen diagnosis of these cases. The perforation leads to a pneumoperitoneum antehepaticum or subdiaphragmaticum. Of twenty-four cases seen by him, twenty were diagnosed by this method. In the remaining four cases the site of the perforation was well covered by the surrounding tissue so that air could not escape, but the diagnosis was made clinically.

Acta Obstetricia et Gynec. Scandinavica, Helsingfors

8: 1-101, 1929

*Use of B C G Vaccine in Prophylaxis of Tuberculosis in Infants. S. A. Gammeltoft.—p. 1.
Incidence of Tuberculosis in Children of Tuberculous Mothers. H. Heckscher.—p. 11.
Anemia of Pregnancy, Resembling Pernicious Anemia and Caused by Lead Poisoning. E. Husfeldt.—p. 25.
*Prognosis of Labor in Old Primiparas. O. Lindén.—p. 35.
Grave Anemia of Pregnancy. E. A. Björkenheim.—p. 54.

Use of B C G Vaccine in Prophylaxis of Tuberculosis in Infants.—In the prophylaxis of tuberculosis in infants Gammeltoft limits the use of B C G vaccine to children living in a tuberculous environment. He does not believe that more extensive vaccination with B C G is justified at the present time.

Prognosis of Labor in Old Primiparas.—Lindén reports his observations on 202 primiparas more than 40 years of age. The object of the study was to determine whether expectant treatment has given results which justify its continued use or call for its discontinuance in favor of more active treatment with an increased number of cesarean sections. In his material he found that about 25 per cent of the patients were delivered after twelve hours and about 55 per cent within twenty-four hours. In 20 per cent of the cases labor lasted longer than forty-eight hours. Sixty per cent of the women were delivered spontaneously and 40 per cent were delivered artificially. There had been a previous miscarriage in forty patients and premature rupture of the membranes in eighty-five but this was not found to influence the average duration of labor or the prognosis for mother or child. The mortality was 0 for the mothers and 10.2 per cent for the infants; after exclusion of three cases in which death was due to prematurity or deformity, it was 8.8 per cent. Because of the favorable results obtained, the author believes that expectant treatment should be continued; the patients should, however, be taken to a hospital. Cesarean section is justified in cases in which not only the child's life but also the mother's life is endangered, as in placenta praevia and eclampsia and in cases in which the child's life is in grave danger and the mother is greatly desirous of having a child. In all other cases it is wiser not to expose the mother to the greater risks of cesarean section, particularly since it has been found that patients operated on are rarely willing to conceive again for fear of a new operation.